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# Impact of (inter)national substance frameworks on the policy on Dutch priority substances

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## Abstract

### **Impact of (inter)national substance frameworks on the policy on Dutch priority substances**

The Dutch policy on substances aims at reducing the risks of 247 ‘priority substances’ that pose a potential risk to human health and the environment. (Inter)national legislation does partially support this aim. Because of this support, the Dutch targets for about 35% of the priority substances can be reached. For the remaining part, the (inter)national frameworks cover the Dutch targets only partially, or not at all. More than 40% of the priority substances is covered by (inter)national frameworks that have less severe targets than the Dutch targets, for example because they use other target concentrations. About 20% of the priority substances is not covered by any (inter)national framework. Nevertheless, some substances in these last two categories already meet the Dutch targets anyway. For the remaining substances, after checking if they are still relevant for the Netherlands, additional Dutch policy might be necessary.

This is the result of research performed by the RIVM in order of the ministry of Housing, Spatial Planning and the Environment (VROM). The 247 substances on the Dutch list of priority substances have been selected because their dangerous characteristics, their emission or their level in the environment could introduce an unacceptable risk for human health and environment. Examples of (inter)national frameworks that cover the Dutch policy on priority substances are the Water Framework Directive (WFD), the OSPAR-convention for the marine environment, and the Dutch Guideline on Emissions (NeR). Introduction of the EU chemicals legislation REACH does also contribute to realisation of the Dutch targets, but the extent of this contribution is currently unknown.

The current targets of the Dutch policy on priority substances are to reach environmental concentrations lower than the so-called Negligible Concentration where possible by the year 2010. The Negligible Concentration is used as target because it defines a safety margin for human and environment that takes into account for combination toxicity.

**Key words:**

priority substances, dangerous substances, unacceptable risk, international frameworks, Dutch policy.



## Rapport in het kort

### **Invloed van (inter)nationale stoffenkaders op het beleid voor Nederlandse prioritare stoffen**

Nederlands beleid is erop gericht om risico's van 247 'prioritaire stoffen' waaraan mogelijke gevaren kleven terug te dringen. (Inter)nationale wet- en regelgeving draagt eraan bij dat de Nederlandse beleidsdoelen voor ongeveer 35% van deze stoffen kunnen worden bereikt. Voor het overige percentage dekken de (inter)nationale kaders het Nederlandse prioritare stoffenbeleid slechts gedeeltelijk af, of helemaal niet. Zo valt ruim 40% van de prioritare stoffen onder (inter)nationale kaders die minder strenge beleidsdoelen nastreven dan de Nederlandse, bijvoorbeeld omdat ze andere normen gebruiken. Ongeveer 20% van de prioritare stoffen valt buiten (inter)nationale kaders. Toch zijn voor sommige stoffen uit deze twee categorieën de Nederlandse beleidsdoelen gehaald. Voor de stoffen waarbij dat niet het geval is, is mogelijk aanvullend nationaal beleid nodig. Eerst moet echter worden bekeken of deze stoffen nog relevant zijn voor Nederland.

Dit blijkt uit onderzoek van het RIVM, in opdracht van het ministerie van VROM. De 247 stoffen op de Nederlandse prioritare stoffenlijst zijn daarvoor geselecteerd omdat deze een meer dan verwaarloosbaar risico voor mens en milieu met zich kunnen meebrengen. Dat komt door hun gevaarlijke eigenschappen, de emissies of de mate waarin ze in het milieu voorkomen. Voorbeelden van (inter)nationale kaders die het Nederlandse prioritare stoffenbeleid afdekken zijn de Kaderrichtlijn Water, het OSPAR-verdrag voor het zeemilieu en de Nederlandse emissierichtlijn voor Lucht (NeR). De invoering van de Europese chemicaliënregelgeving REACH draagt bij aan het realiseren van de Nederlandse doelen, maar de omvang van die invloed is op dit moment nog onduidelijk.

Volgens het Nederlandse beleid mag de concentratie van elke prioritare stof in het milieu op langere termijn, zo mogelijk voor 2010, niet hoger zijn dan het zogeheten verwaarloosbare risiconiveau. Het verwaarloosbare risiconiveau geldt als doel om mens en milieu te beschermen tegen een gelijktijdige blootstelling aan meerdere stoffen.

Trefwoorden:

prioritaire stoffen, gevaarlijke stoffen, risico, internationale stoffenkaders, Nederlands beleid.



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## Summary

At (inter)national level industry as well as authorities are making efforts to reduce the risks of substances for human health and the environment. Within several (inter)national frameworks, provisions have been taken to manage the risks of substances during production and use, to set environmental quality standards for substances and to monitor substances. Several of these frameworks (e.g. OSPAR or WFD) have listed a number of substances needing specific attention. In the Netherlands, one of these lists is the list of Dutch priority substances (NLpsl). This list contains substances that get priority in the Dutch environmental policy requiring risk reduction for man and the environment. The current targets of the policy on Dutch priority substances are to reach environmental concentrations lower than the so-called Negligible Concentration where possible by the year 2010. The target set for the year 2000 was the Maximum Permissible Concentration (generally a factor 100 higher than the Negligible Concentration). In this report it is investigated to which extent the different (inter)national frameworks affect or support the policy on Dutch priority substances for reaching its target.

The main conclusion is that for around one third of the Dutch priority substances (89 of the 247 substances on the NLpsl) the 2010-target could be realised through the measures of international frameworks (OSPAR, Stockholm POP Convention, UNECE-POP Protocol and Water Framework Directive priority substances). However, the year for meeting the Dutch policy goal will, when depending solely on these four international frameworks, not be 2010, but probably later (in general approximately the year 2020). For the remaining two third the target of the policy on Dutch priority substances is currently not sufficiently supported by other (inter)national frameworks.

Of the 89 substances mentioned above, in reality 24 substances already met the 2010-target in 2006. This means that for 65 remaining substances meeting the target is sufficiently supported by other frameworks. More than half of the substances with insufficient support of other frameworks causes a (possible) environmental problem. A large deal of substances with unknown environmental status (policy status D) is, however, covered by the (inter)national frameworks and therefore monitoring of these substances has a lower priority.

In conclusion, the policy on Dutch priority substances is still an important framework in the Dutch environmental policy on substances. To improve the usefulness of the list, a further evaluation, including an update, is recommended, as well as a better integration with other frameworks.



# 1 Introduction

The Dutch Ministry of Housing, Spatial Planning and the Environment (VROM) requested the RIVM to prepare an overview of the relations between (inter)national substance frameworks and the Dutch list on priority substances (NLpsl). VROM intends to use this report for reviewing the Dutch substances policy and policy on priority substances in particular. For the future of the NLpsl, VROM addresses the following questions:

- to what extent other (inter)national frameworks may affect the policy on Dutch priority substances;
- whether the substances on the NLpsl and the targets of the policy on Dutch priority substances for these substances are sufficiently covered by the existing and new (inter)national frameworks;
- whether the current NLpsl should be revised due to the emergence of new relevant substances from these other (inter)national frameworks or because some of the substances on the list may no longer be relevant.

This report starts with an introduction (chapter 1) containing a description of the NLpsl. Subsequently, an overview is presented of frameworks that were not considered when the NLpsl was composed or updated. This is followed by a section where the references for the information in this report are given. The introduction also contains some general background information on the legal basis and limit values used in the different frameworks. In chapter 2, a description is given of the different frameworks linked to the NLpsl, including interactions and consequences for the NLpsl based on each framework individually. In chapter 3, it is discussed how well the targets of the policy on Dutch priority substances for substances on the NLpsl are covered by all frameworks together. This is followed by a discussion of the integration of the NLpsl in other frameworks and the future of the NLpsl. Soil frameworks are not considered in the analysis in this chapter because of the difference in approach between the Dutch soil policy and the Dutch policy on priority substances (see section 2.2.11). Chapter 4 contains general conclusions and recommendations. In Appendices 1, 2 and 3, the tables are given that are used to compose this report. Appendix 4 gives a resulting list of substances that do not meet the targets of the policy on Dutch priority substances and are not covered by other frameworks.

## 1.1 The policy on Dutch priority substances, the targets and the list

The targets of the policy on Dutch priority substances for substances on the NLpsl are to reach environmental concentrations lower than the negligible concentration (NCs) where possible by the year 2010. By the year 2000, the environmental concentrations should have been, where possible, at most the maximum permissible concentrations (MPCs) for the substances that were on the list at that time. The NC is chosen as target for the long-term environmental quality to be achieved. The NC takes into account that man and environment are exposed to multiple substances at the same time (mixture or combined toxicity). In 2001 it has been demonstrated that the emissions for most of the initially fifty substances on the NLpsl were reduced in such an amount, that they already met or were close to the target of NC in the environment (VROM, 2001). This policy, aiming at further reduction of risk of additional priority substances for human and environment, is continued in the period 2007 to 2011. In this report, only the target of NCs is taken into account since this is the current target of the policy. The NLpsl is relevant for the realisation of the general Dutch national substances policy. For the protection of man and the environment, substances from this list have priority in the Dutch environmental policy for achieving this reduction. The list is implemented in the Annual Environmental Report (MJV) and

the Dutch Emission Directive (NeR). The list is an essential instrument for the authorities in granting permits. Permit granting is in fact the most important Dutch policy instrument for reaching the targets for Dutch priority substances. Additionally, the NLpsl was used in negotiations on international policy instruments considering the use of substances like REACH, WFD and IPPC. Currently, however, since the EU-covering frameworks like REACH and the WFD have come into force, the use of the NLpsl is mainly restricted to permit granting, and therefore the effects of the NLpsl will be mainly for limiting local emissions.

The Dutch list of priority substances (NLpsl) contains 247 substances that require special attention from several (inter)national policy frameworks. The list is composed of substances that are of high concern for human health and/or the environment because of their intrinsic hazardous properties, high emission and/or presence in the environment.

To be able to describe the environmental status of every priority substance, the substances from the NLpsl are categorized in one of the following categories:

- A The concentration in one of the environmental compartments is nationally or regionally higher than the MPC; there is a major environmental problem.
- B The concentration in one of the environmental compartments is nationally or regionally in between the MPC or NC; there is a minor environmental problem, locally MPCs could be exceeded incidentally.
- C The concentration in all environmental compartments is nationally below or around the NC; there is no environmental problem, locally NCs could be exceeded incidentally.
- D There is not enough data on the concentrations of the substance in the environment; therefore, categorization of the substances is not possible. In the Netherlands, most of the substances in this category are produced, used and/or emitted to air and water. Therefore presence of the substances on the NLpsl is relevant.

The last overview of policy statuses for the substances on the NLpsl dates from 2006. In 2011 an update over the years 2007 to 2011 is expected. Factsheets (in Dutch) on the Dutch priority substances, which, amongst others, give the policy status and MPC and NC, can be found at: [www.rivm.nl/rvs/stoffen/prio/totale\\_prior\\_stoffenlijst.jsp](http://www.rivm.nl/rvs/stoffen/prio/totale_prior_stoffenlijst.jsp).

## 1.2 Composition of the NLpsl

Selection of substances or substance groups for this list is based on hazardous properties, emission and/or past or present presence in the environment, potentially causing a serious risk for human health or the environment. Originally this list consisted of 50 substances, while 162 more substances have been added in 2004. In 2006 another 36 substances have been added that are part of international agreements and needed implementation in the Netherlands. In total, the list has now 247 entries. The total NLpsl is composed of substances from several international lists and substances that are, based on their characteristics, cause for very high concern (NL-VHC; in Dutch: zeer ernstige zorg - ZEZ).

The international lists used for composition of the NLpsl are lists from the OSPAR Convention, the EU Water Framework Directive (WFD), the Stockholm Convention on persistent organic substances (POPs) and the UNECE POP Protocol (see section 2.1). Because some of these lists are frequently updated and changes have been made since the last update of the NLpsl, there are currently substances on some of these lists which, strictly speaking, need implementation in the Netherlands, but that are so far not included by the NLpsl. Because of the different lists used for composing the NLpsl, there is

overlap of substances. This is caused by the presence of substance groups and individual substances from these groups on the list. In the analysis in this report, substances and substance groups are counted separately. Because of this it occurs that a framework has a higher coverage on the NLpsl than there are substances in its list. For example, OSPAR has 'hexachlorocyclohexane isomers' on its list that covers for two substances on the NLpsl: hexachlorocyclohexane and gamma-hexachlorocyclohexane.

### 1.3 Other (new) frameworks relevant to the policy on Dutch priority substances

Apart from the frameworks that were used to compose the NLpsl, there are also several (new) frameworks which are linked to the NLpsl because they also deal with substances and the environment. These frameworks are the EU Air Directive, the fourth EU Daughter Directive on air and the REACH Regulation. Because of this linkage, these frameworks can help for the target for the substances on the NLpsl to be met and the other way round, the NLpsl may in some cases be of help for meeting the targets of these linked frameworks. Some of these new frameworks also put forward substances that are relevant for the NLpsl. Especially REACH is expected to have a large influence on the NLpsl, because it deals with all industrial chemicals produced or used in large quantities in Europe. Details on these frameworks are given in section 2.2. The selection of the linked frameworks is based on the frameworks named in the progress report on the Dutch environmental policy on Dutch priority substances (VROM, 2006). Other frameworks have been considered, but only the most relevant frameworks are discussed and therefore this list of additional frameworks is not exhaustive. For example, the frameworks for biocides and plant protection products have not been included, because almost all biocides and plant protection products on the NLpsl are already banned or severely restricted.

### 1.4 Sources used

Information on the frameworks was mainly taken over from the progress report on the Dutch environmental policy on Dutch priority substances (VROM, 2006). Other sources were the websites of the respective frameworks (OSPAR, 2009, UNECE, 2009, UNEP, 2009, ECHA, 2010), the website of the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM, 2010b), the website of the EU Directorate for the environment (EC, 2010a) and the original legislation documents. In addition, experts from the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM), the Dutch Ministry of Transport, Public works and Water management (V&W) and SenterNovem have been interviewed or have commented on draft versions of this report. The information on the NLpsl from the progress report on the Dutch environmental policy on Dutch priority substances is updated for the new frameworks and changes in existing frameworks.

### 1.5 General backgrounds

#### 1.5.1 Overview of limit values

In order to meet their individual goals, the different frameworks use different limit values. The policy on Dutch priority substances uses the Maximum Permissible Concentration and the Negligible Concentration, which currently have the following definition:

*Maximum Permissible Concentration (MPC)* – concentration in an environmental compartment at which:

- 1 no effect to be rated as negative is to be expected for ecosystems;
- 2a no effect to be rated as negative is to be expected for humans (for non-carcinogenic substances);
- 2b for humans no more than a probability of  $10^{-6}$  over the whole life (one additional cancer incident in  $10^6$  persons taking up the substance concerned for 70 years) can be calculated (for carcinogenic substances) (Lepper, 2005).

Environmental risk limits like the Annual Average Environmental Quality Standard (AA-EQS) and Predicted No Effect Concentration (PNEC) used in other EU frameworks like the WFD and REACH are derived according to an equivalent methodology as for the MPC and are therefore for the purpose of this study considered equivalent to the MPC. Bodar et al. (2010) present a number of considerations on the use of risk limits from REACH towards other policy frameworks.

*Negligible Concentration (NC)* – concentration at which effects to ecosystems are expected to be negligible and functional properties of ecosystems should be safeguarded fully. It defines a safety margin that takes combination toxicity into account. In general, the NC is derived by dividing the MPC by a factor of 100. The NC approach is only used in Dutch policy, but some international frameworks have set target concentrations for a few substances that are equivalent to the NC.

Not all the frameworks considered in this report use the MPC or NC as target concentrations. For example, the EU Air Directive uses limits that are not always equal to the MPC or NC. In the case of benzene a limit value has been set which is not equal to the MPC or NC. For lead, the limit value is equal to the MPC. The NEC (National Emission Ceilings) uses Emission Ceilings. These are total amounts of a substance which are permitted to be emitted per country per year. Therefore these values are not expressed in an air concentration, but in kton emission per year. Because of using another kind of targets, these frameworks are more difficult to compare with the policy on Dutch priority substances.

## 1.5.2 Directives, conventions and protocols

The different frameworks consist of directives, regulations, conventions and more. Therefore, they have a different legal status. The frameworks discussed in this report have one of the following statuses:

- EU Directives have to be implemented in the national law of the EU Member States.
- EU Daughter Directives are normal directives, with the same status, but are referred to as Daughter Directives because they are a later addition to the main directive.
- EU Regulations are immediately active for all Member States without the need for implementation into national legislation except for implementing national jurisdiction.
- Conventions and protocols are international agreements that have to be implemented by the contracting parties. Some conventions and protocols have additionally been implemented as EU legislation.

## 2 Framework overview

### 2.1 Frameworks used to compose the NLpsl

#### 2.1.1 Stockholm Convention on persistent organic pollutants

The Stockholm Convention on Persistent Organic Pollutants (UNEP) is a global treaty to protect human health and the environment from Persistent Organic Pollutants (POPs). The commitments of this convention are implemented through the EU Regulation 850/2004/EC. POPs remain intact in the environment for long periods and therefore they become geographically widely distributed and accumulate in the fatty tissue of humans and wildlife. The Stockholm Convention, which was adopted in 2001 and entered into force in 2004, requires parties to take measures to eliminate or reduce the release of identified POPs into the environment. Governments are obliged to use BAT (Best Available Techniques)/BEP (Best Environmental Practices) to reduce or eliminate POPs emissions, but exemptions are possible. At the start the convention named eight plant protection products and biocides, two industrial chemicals and two side products of combustion processes. Since August 2009, nine more substances are added to the convention. This amendment enters into force on 26 August 2010. This convention covers for nineteen substances on the NLpsl. Considering the first set of twelve substances, the Netherlands already fulfil the commitments of the Stockholm Convention, therefore, their current emission should be negligible. Where these substances still exceed the NC, this is due to their high persistence in the environment. For the new substances on the list of the Stockholm Convention it can be expected that fulfilling the commitments will help maximally to bring the environmental concentration down and reach the Dutch targets, but they are currently not on the NLpsl. These new substances are listed in Appendix 2.

#### 2.1.2 UNECE-POP Protocol

The UNECE-POP Protocol, which came into force in 2003, is part of the Convention on Long-range Transboundary Air Pollution (LRTAP, see section 2.2.1) and deals with persistent organic pollutants (POPs) according to the criteria in the protocol. It refers to the same group of substances (POPs) as handled in the Stockholm Convention. It does, however, follow its own protocol for decision making and therefore it has a different list of substances that partially overlaps with the list of the Stockholm Convention. This list exists of 16 substances comprising 11 pesticides, 2 industrial chemicals and 3 by-products/contaminants. This protocol covers for 22 substances on the NLpsl. The ultimate objective is to eliminate any discharges, emissions and losses of POPs. The protocol bans the production and use of some products outright (aldrin, chlordane, chlordecone, dieldrin, endrin, hexabromobiphenyl, mirex and toxaphene). Others are scheduled for elimination at a later stage (DDT, heptachlor, hexachlorobenzene, PCBs). Finally, the protocol severely restricts the use of DDT, HCH (including lindane) and PCBs. The protocol includes provisions for dealing with the wastes of products that have been banned. It also obliges parties to reduce their emissions of dioxins, furans, PAHs and HCB below their levels in 1990. The main difference with the Stockholm Convention is that this protocol covers Europe and North-America, while the Stockholm Convention covers the whole world. Although they deal with the same group of substances, the substances lists are different at some points. The commitments of this convention are implemented through EU legislation (EU Regulation 850/2004/EC). Considering the large overlap with the Stockholm Convention, it can be presumed that the relation between the NLpsl and this protocol is similar as for the Stockholm Convention.

### 2.1.3 OSPAR Convention

The OSPAR Convention dates from 1998 and is a combination of the ‘Oslo Convention for the Prevention of marine pollution by dumping from ships and aircrafts’ and the ‘Paris Convention for the prevention of marine pollution from land based sources’. The OSPAR Hazardous Substances Strategy sets the objective of preventing pollution of the North-Atlantic maritime area by continuously reducing discharges, emissions and losses of hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background levels for naturally occurring substances and close to zero for man-made synthetic substances. The OSPAR Commission is implementing this strategy progressively by making every endeavour to move towards the target of the cessation of discharges, emissions and losses of hazardous substances by the year 2020.

For the OSPAR strategy several lists of substances have been composed:

- List of substances of possible concern
- List of chemicals for priority action
- List of substances/compounds liable to cause taint

Substances on the list of possible concern are selected on substance specific properties in relation to persistence, bioaccumulative potential and toxicity. Substances from this list have been prioritised on the basis of actual presence and toxicity in the aquatic environment and were placed on the List of Chemicals for Priority Action. All measures under the OSPAR Convention that restrict production and use or set emission controls have been implemented in Dutch legislation directly or via EU-legislation. Most of these measures are covered by the EU IPPC-Directive (see below) and other EU legislation. All substances which are currently listed by OSPAR for Priority Action are on the NLpsl and therewith OSPAR covers for 57 substances on the NLpsl. One substance on the NLpsl, hexamethyldisiloxane, has been added in 2006, because at that time it was an OSPAR priority substance. In 2007, hexamethyldisiloxane has been removed from the OSPAR list for priority action because it does not fulfil the OSPAR PBT criteria (Persistent, Bioaccumulative and Toxic), but so-far the NLpsl has not been updated accordingly.

The OSPAR Convention does also contain a list of substances/compounds liable to cause taint. Contracting parties should ensure that whenever practicable substitutes are available, compounds on this list should be substituted.

To achieve the objective of its Hazardous Substances Strategy for the (groups of) substances on the List of Chemicals for Priority Action, so-called background documents have been drawn up for each substance on the List. The documents provide an overview of sources and pathways, environmental occurrence, and existing restrictions and other measures. They also identify the need for further measures.

In addition to the measures, OSPAR collects information under the Joint Assessment and Monitoring Programme (JAMP). This information is about emissions of OSPAR priority substances at source, inputs of these substances to the sea by major rivers and by atmospheric deposition, and concentrations and biological effects of these substances in the marine environment.

The targets of the policy on Dutch priority substances are negligible concentrations for the substances on the NLpsl in all environmental compartments. Therefore, the OSPAR targets for substances listed by OSPAR for Priority Action are comparable or more stringent for the marine environment than the targets of the policy on Dutch priority substances. However, for reaching the OSPAR targets there is a longer time path. OSPAR will to some extent help to reach negligible concentrations for OSPAR

compounds of Priority Action in the environment, but does not aim at the year 2010 as preferred by the policy on Dutch priority substances. The list of substances of possible concern does only serve as basis for selection of substances for the list of priority action and is therefore not considered in our analysis on coverage (section 3.1). For the list of substances/compounds liable to cause taint, it can be expected that their environmental concentration will be reduced in due time. This will only happen when an alternative for the substance/compound is available and therefore it is unknown when and/or if this will actually occur. Therefore this latter list is not supposed to cover for the targets of the policy on Dutch priority substances and also not included in our analysis on coverage (section 3.1).

The collection of emission data assembled by OSPAR is to date still more comprehensive and transparent than the E-PRTR (including the EPER) (see below). Future reporting to E-PRTR is, however, expected to improve and thus gain value. OSPAR's data collection on inputs to the sea through major rivers and atmospheric deposition, and on concentrations and biological effects of these substances in the marine environment, is foreseen to remain an important information source for the status assessments under the EU Water Framework Directive and Marine Strategy Framework Directive.

#### **2.1.4 EU Water Framework Directive (2000/60/EC) and Priority Substance Directive (2008/105/EC)**

The target of the Water Framework Directive (WFD) is to establish proper conditions for the European surface and ground water by 2015. This means that it aims to protect and improve the water quality, as well as to stimulate a sustainable use of water. The WFD makes a distinction between chemistry and ecology for surface water and chemistry and quantity for groundwater. Annex X of the WFD is a list of 33 priority substances of which the emission should be actively reduced. All these substances are on the NLpsl and therewith, the WFD list of priority substances covers for 45 substances on the NLpsl. Part of these for the WFD listed substances, is selected as priority hazardous substance, which implies that emission of these substances should be ended within a timeframe of 20 years from the date that emission reduction measures are adopted. These emission reduction measures should be implemented by the Member States. In the Netherlands the main channels for implementation are the Law on Environmental Management and the Law on Pollution of Surface Waters.

At 16 December 2008 a directive based on the WFD for priority substances within the WFD is endorsed. In this proposal environmental quality standards are set for the 33 priority substances and eight substances from other EU-Directives. The WFD states that these quality standards should be reached for the WFD priority substances by 2015. Deadline for transposition is July 2010.

Article 10 of the WFD prescribes the combined approach for point and diffuse sources to control discharges into surface waters. Emission, discharge and loss of the dangerous priority substances should be ceased or phased out in general at the latest 12 years after the date of entry into force of this directive. EC-proposals for measures for the priority substances as mentioned in article 16(6) may have provided a good starting point for the Member States in defining measures for the hazardous substances. However, in the Daughter Directive on Environmental Quality Standards (EQS) and emissions, the EC has not submitted a proposal for control measures of the priority substances. It was stipulated that it was more cost-efficient and proportionate to formulate measures nationally instead of at Community level. Moreover, it became clear that 'there is already in place (or pending) a significant body of EU emission control legislation which is contributing significantly to achievement of the WFD objectives for priority substances.' According to the Daughter Directive the European Commission shall, by 2018, verify that emissions, discharges and losses progress to compliance. On basis of reports

from Member States the European Commission will review the need to amend existing acts and the need for additional specific Community-wide measures, such as emissions controls.

Besides the obligation for priority substances, Member States are obliged to produce a list of other relevant substances and to produce environmental quality standards for these substances. For every river basin there is a list of substances which are relevant for that specific river basin. The basins relevant for the Netherlands are those of the rivers Rhine, Meuse, Scheldt and Ems. The lists for these basins contain 14, 3, 3 and 8 substances respectively and 5, 3, 3 and 5 of these are on the NLpsl.

As described above, one of the targets of the WFD is to reach the EQS by 2015. These EQSs are equal to the Dutch MPCs. Since the target of the policy on Dutch priority substances is to reach negligible concentrations (generally 100 times lower than the WFD-EQS) where possible by 2010, reaching the WFD targets will not be sufficient for the policy on Dutch priority substances. In addition, substances that are listed as dangerous with priority are considered to cover for the targets of the Dutch policy on priority substances because for these substances there are emission and production stops. Substances that are not likely to meet the WFD criteria by 2015 are targeted by the Dutch Execution Program for Diffuse sources of Water pollution (VROM, 2007). This Dutch policy will, where relevant, target local sources to reduce environmental concentrations to meet the WFD criteria.

#### **2.1.5 NL-VHC list**

In the year 2003, the RIVM has composed a list with compounds of very high concern (NL-VHC; in Dutch: zeer ernstige zorg - ZEZ). This list was proposed to be used in several policy frameworks like the Dutch Emission Directive (NeR) and the annual environmental report (MJV), both are discussed below. For composition of the NL-VHC-list substance lists from OSPAR, the first NLpsl, ENECE, Stockholm, WFD, NeR and the TA-luft have been used. Classification as NL-VHC is based on hard and soft facts and a distinction is made between human and environmental endpoints. Hard facts are experimental data retrieved from international databases like AQUIRE from the EPA. Soft facts are non-testing data generated with EPIWIN (US EPA, 2009). For the human part, the relevant endpoints are toxic, carcinogenic, mutagenic and toxic for reproduction. For the environmental part, the relevant endpoints are persistence, bioaccumulation and toxicity. The NL-VHC-list has been used to compose the NLpsl and the substance list of the NeR. 207 substances from the NLpsl are classified as NL-VHC.

#### **2.1.6 NeR**

The Dutch Emission Directive (Nederlandse Emissie Richtlijn - NeR) has as first goal to the harmonization of environmental permits where it comes to emission to air. The second goal is information management on the latest technical methods for the reduction of emissions. This directive is in force since 1992 and is frequently renewed. The last significant renewal was in 2008 when REACH has been integrated in the NeR. The NeR deals with process emissions and combustion emissions to air and is the directive for permits to all industries that have to apply for environmental permits. The range of chemicals covered by the NeR is wider than covered by REACH, as discussed below, because the NeR also considers chemicals that are not trade or production chemicals like substances formed in combustion processes, etc. In the NeR, six categories are indicated based on chemical, physical and toxicological characteristics. For one of these categories, there should be no emission (the 'MVP' category). Currently, this category covers for 83 substances on the NLpsl.

When granting permits, emission of substances to air can be controlled and reduced. Permit control is therefore one of the most important tools for reaching the targets of the policy on Dutch priority substances. For the 84 substances on the NeR-list for zero emission, the granting of permits will be limited and best effort should be performed to minimise emission. Therefore air concentrations will be

largely reduced. It should be considered that not all substances on the NLpsl relevant to the air compartment are listed in the NeR. For a better integration between the policy on Dutch priority substances and the NeR it is advised that all air relevant substances on the NLpsl will be listed in the NeR.

## 2.2 Frameworks linked to the NLpsl

### 2.2.1 Geneva Convention on Long-range Transboundary Air Pollution (LRTAP)

This convention dates from 1979 and entered into force in 1983. The convention has been extended with several protocols that are connected to the NLpsl. These protocols are the UNECE-POP Protocol (section 2.1.2) and the Heavy Metals Protocol (section 2.2.2). These protocols are discussed separately. The EU NEC Directive (section 2.2.10) also originates from LRTAP.

### 2.2.2 UNECE Protocol on Heavy Metals

This protocol was adopted on 24 June 1998 in Aarhus (Denmark). It targets three particularly harmful metals (cadmium, lead and mercury), that are also on the NLpsl. According to one of the basic obligations, parties were to reduce their emissions for these three metals below their levels in 1990 (or an alternative year between 1985 and 1995). The protocol aims to cut emissions from industrial sources (iron and steel industry, non-ferrous metal industry), combustion processes (power generation, road transport) and waste incineration. Since cadmium, lead and mercury are on the NLpsl, the protocol should contribute to meet the targets of the policy on Dutch priority substances for these metals.

### 2.2.3 Classification and Labelling Regulations 67/548/EC and 1272/2008/EC

Criteria for classification and labelling within the EU were given in Annex VI of the 67/548/EC Directive, while annex I of this directive lists 8000 substances that have been classified and labelled according to Annex VI. Recently, the directive is replaced by the CLP Regulation (1272/2008/EC), where the list of classified chemicals is included in Annex VI of that regulation. When substances are classified as C(arcinogenic) and/or M(utagenic) and/or R(eprotoxic) this has consequences for the applications of the substance and the laws involved.

This regulation has not been used for adding substances to the NLpsl. Nevertheless, the list is continuously under change and new information on CMR properties (Carcinogenic, Mutagenic or toxic to Reproduction) of substances can be used in an update of the NLpsl. For example it could be used as source of information on CMR characteristics of substances on the NLpsl.

### 2.2.4 IPPC-Directive

The Integrated Permission and Pollution Control Directive (IPPC) obliges EU Member States to regulation of large polluting companies through integrated permits based on the best available techniques. This regulation is in force since 1999 and was renewed in 2008. In the Netherlands, this directive has been implemented into existing regulations (Law on Environmental Management and Law on Pollution of Surface Water). The IPPC Directive contains an indicative list that should be taken into account when permits are warranted. This list consists of groups and categories of substances emitted to water and air. For these substances maximum emission levels should be stated in the permits.

When handing out permits, emission of substances can be controlled and reduced. The targets for the permits to be given are not determined by other (EU) legislation like REACH, therefore more severe targets can be set than the MPC level. Therefore, this directive is one of the most important tools for reaching the targets of the policy on Dutch priority substances of negligible concentrations in the environment. This directive is, however, not considered in our analysis of coverage (section 3.1) because it only handles emission levels and no individual substances are named on the indicative IPPC-list. For a better integration between the policy on Dutch priority substances and the IPPC-Directive, it is advised to investigate which substances from the NLpsl are part of the substance groups of the IPPC. Thereby it can be made clear which substances from the NLpsl are IPPC relevant and therefore subject to permit application.

### **2.2.5 Council Directive on the limitation of emissions of volatile organic compounds (VOCs) (1999/13/EC)**

Directive 1999/13/EC is proposed to reduce the emission to air of volatile organic compounds (VOCs). These substances are emitted by the use of organic solvents in the processes of degreasing, printing, coating, painting, cleaning of metals, dry cleaning and the use of glue. VOCs induce the formation of ozone in the troposphere and are a threat for human health. The goal of the directive is reduced emission from industrial processes and it is in force since 2007. From the NLpsl, 66 substances are covered by this directive by having a vapour pressure equal to or higher than 10 Pa or by being listed as VOC (in Dutch VOS) in the Dutch emission registration. With the goal to improve production processes and reduce emission this directive will contribute to meet targets for VOCs on the NLpsl.

### **2.2.6 E-PRTR Regulation (2006/166/EC) and Annual Environmental Report**

In the Dutch Decree on Reporting on Environmental Issues, active since 1999, it is stated which firms are obliged to produce an annual environmental report ('Milieujaarverslag', MJV). In these reports they have to give details on production, use and emission of substances. Apart from the firms that are obliged to produce the MJV, there is also a second group of firms who produce an MJV because of an agreement with the Dutch Government. In the MJV emission details on several substances from the NLpsl should be given. Since 2009 the MJV has been integrated with the EU Pollutant Release and Transfer Register (E-PRTR) Regulation in the integrated Pollutant Release Transfer Report (PRTR). The E-PRTR aims to enhance public access to environmental information through the establishment of a coherent and integrated register. It is thereby also supposed to contribute to the prevention and reduction of pollution, availability of data for policy makers and facilitating public participation in environmental decision making. The regulation establishes an integrated pollutant release and transfer register in the form of a publicly accessible electronic database. It also lays down rules for its functioning and should contribute to the prevention and reduction of pollution of the environment. In the Netherlands, the E-PRTR is implemented under the Decree on Reporting on Environmental Issues. The first reporting year under the E-PRTR was the year 2007 and respective information had to be reported by the EU Member States in June 2009. The integrated PRTR is based on the E-PRTR supplemented with essential parts of the MJV. The integrated PRTRs are an important source of information for the annual reports on emission registration and the environmental balance.

These regulations are important to monitor if emission reducing measures are being effective, but are not considered in our analysis of coverage (section 3.1) because they regulate reporting on emission levels and do not set any targets. It is also a fact that details on local emissions do not give specific details on the (regional) air concentrations. They can however be used to visualise where more effort should be put in emission reduction, because from the emission details can be seen where most of a substance is emitted. It should, however, be considered that the number of substances from the NLpsl that have to be reported in the Annual Environmental Report is limited. For a better integration of the

policy on Dutch priority substances into this framework, it should be considered to have compulsory reporting of all substances on the NLpsl in the Annual Environmental Report or the integrated PRTRs.

### 2.2.7 REACH

REACH is a new EU Regulation on chemicals and their safe use (1907/2006/EC). It deals with the Registration, Evaluation, Authorisation and restriction of CHEMical substances. The new law entered partially into force on 1 June 2007 and fully on 1 June 2008. This framework aims at production, import, marketing and use of chemicals as such, as components in preparations and in articles.

#### Registration

Manufacturers and importers have to register substances manufactured or imported in quantities of one or more tonne per year per manufacturer/importer. In the Netherlands, the national jurisdiction for implementing REACH is integrated under the Law on Environmental Management.

The proof for safe use of substances lies in the hands of the manufacturers, importers and downstream users. For REACH manufacturers and importers have to compose a technical dossier containing information on the substance to be registered. The amount of information required in the dossier depends on the amount of the substance they intend to manufacture and/or market and the hazardous properties. For the quantity of  $\geq 10$  tonnes an additional chemical safety report is compulsory in which to demonstrate safe use of a substance. For the chemical safety report DNELs and PNECs are derived (which are for the purpose of this report considered comparable to MPCs, for details see Bodar et al. (2010)). All registrations need to be submitted to the European Chemicals Agency (ECHA).

#### Authorisation and restriction

In a procedure separate from the registration, Substances of Very High Concern (SVHCs) can be identified as substances for which import and use have to be authorised. For that reason, an SVHC should be identified firstly by the European Commission in co-operation with the Member States. Identification as SVHC is based on the following criteria, where the substance is:

- Carcinogenic, Mutagenic or toxic to Reproduction (CMR) classified in category 1 or 2,
- Persistent, Bioaccumulative and Toxic (PBT) or very Persistent and very Bioaccumulative (vPvB) according to the criteria in Annex XIII of the REACH Regulation, and/or
- identified as of equal concern, on a case-by-case basis, from scientific evidence as causing probable serious effects to humans or the environment of an equivalent level of concern as those above e.g. endocrine disrupters.

For identification as SVHC, Member State Competent Authorities or the ECHA (on behalf of the European Commission) will prepare a dossier in accordance with Annex XV. Identified SVHC substances will be published by ECHA on the candidate list being candidates for authorisation and prioritised SVHC substances subject to authorisation are placed in Annex XIV.

Before a substance is placed on Annex XIV, it will normally at first be placed on a "Candidate List" (also called the SVHC list). From this candidate list, the ECHA identifies priority substances that are recommended to be included in Annex XIV of REACH. After consulting the Member States, the European Commission will decide if these recommended substances are included in Annex XIV. Currently there are 29 substances on the candidate list from which seven substances are prioritised by the ECHA for inclusion in Annex XIV. In this year (2010) it is expected that the first Annex XIV will be adopted and that another 50 compounds will be added to the candidate list. It has been noted that only ten substances listed on the NLpsl are currently on the candidate list. Substances from the candidate list that are currently not on the NLpsl are listed in appendix 2. Even without placement in Annex XIV, being listed on the candidate list has legal consequences for the substance because all

substances on this list should be notified if they will be used in the production of an article. The candidate list is expected to be amended twice a year, Annex XIV to be amended once every two years.

The use of substances placed on Annex XIV should be authorised. For requesting an authorisation a chemical safety assessment shall be performed. This chemical safety assessment will be aimed at expected environmental concentrations not exceeding the PNEC (which is equal to the MPC). However, the authorisation procedure shall, under certain conditions, also contain a Socio-Economic Analysis if the risk cannot be adequately controlled and if social or economic benefit of the use of a compound outweighs the risk, it could be accepted that the MPC is exceeded.

Substances are restricted when they have an unacceptable risk, and will be listed in Annex XVII with their restrictions. The effect of placing substances on Annex XVII will vary from substance to substance. For one substance the restriction could be a total ban on manufacture, import and use, for the other substance the restriction could be limited to one specific application. In the view of the analysis in this report all substances on Annex XIV are considered to be covered for their MPC level. Since there is not one clear target for the substances on Annex XVII, this list is not considered to cover fully for the targets of the policy on Dutch priority substances.

#### **Consequences of REACH for the NLpsl substances**

For REACH, 216 of the 247 substances/substance groups on the NLpsl have been pre-registered within Europe. Although a few substances have been pre-registered by Dutch companies, through free trading within the EU all substances that will in the future be registered under REACH can enter the Dutch market and so enter the Dutch environment. For 24 substances/substance groups could not be checked whether they are pre-registered, these are in general chemical groups for which no CAS number was available. It might be possible that these substances have already been pre-registered under another identity heading. Because of this, only 223 substances on the NLpsl are checked for their pre-registration. For metals and their compounds the listed CAS numbers refer to the metal itself and therefore it is only checked if the metal itself is pre-registered. Its metal compounds were in that case not checked further unless they have a separate entry on the NLpsl.

Most of the checked substances from the NLpsl (216 of the 223) are pre-registered under REACH (Figure 1) and it is expected that concerns for the environment and human health for these substances will be regulated under REACH in due course. However, a chemical safety assessment is only performed for substances manufactured or imported in quantities of ten tonnes or more per year or when they are listed in Annex XIV. Currently it is unknown which of the pre-registered substances exceed this trigger of ten tonnes. Full registration for most of these substances being of very high concern (CMRs and PBTs) should be made in 2010 with a few exceptions with a deadline of 2013. It is not expected that REACH will cover all substances on the NLpsl, because REACH only deals with manufacture, import, market and use of substances, and not with waste and combustion products.

Substances of the NLpsl not pre-registered under REACH (7) can be divided in two groups. The first group contains substances for which can be assumed that there will be no further concern for the environment and human health because these substances are not manufactured or used anymore in the EU because of regulation restrictions. These are, for example, tributyl-tin and CFCs. There are, however, exemptions where use is still allowed. For example, old stocks of PFOS containing fire extinguishing foams can still be used. In the second group are substances that might still cause problems because they are unintentionally formed in, for example, combustion processes like PAHs. For this last group separate legislation on EU or Dutch level will be necessary.

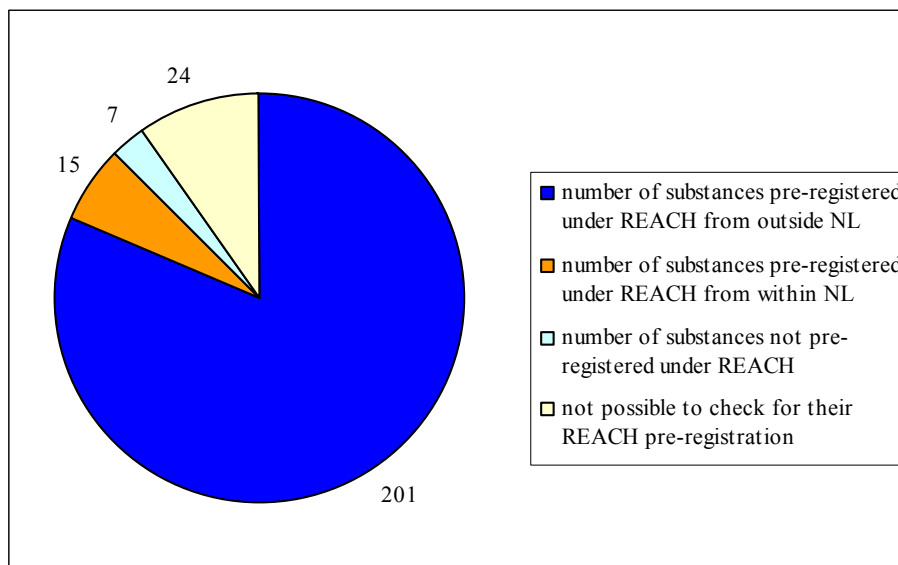


Figure 1 Overview of REACH pre-registration of substances from the NLpsl.

Considering the large number of substances to be dealt with under REACH and the staggered registration procedure for existing substances (in REACH called phase-in substances), it cannot be stated when and to what extent REACH will actually have an effect on the emission of substances from the NLpsl. All substances from the list with known labelling for carcinogenic, mutagenic and reprotoxic properties and/or environmental toxic properties are pre-registered under REACH. However, not all substances classified as NL-VHC (= very high concern based on CMR or PBT characteristics) are pre-registered (Figure 2).

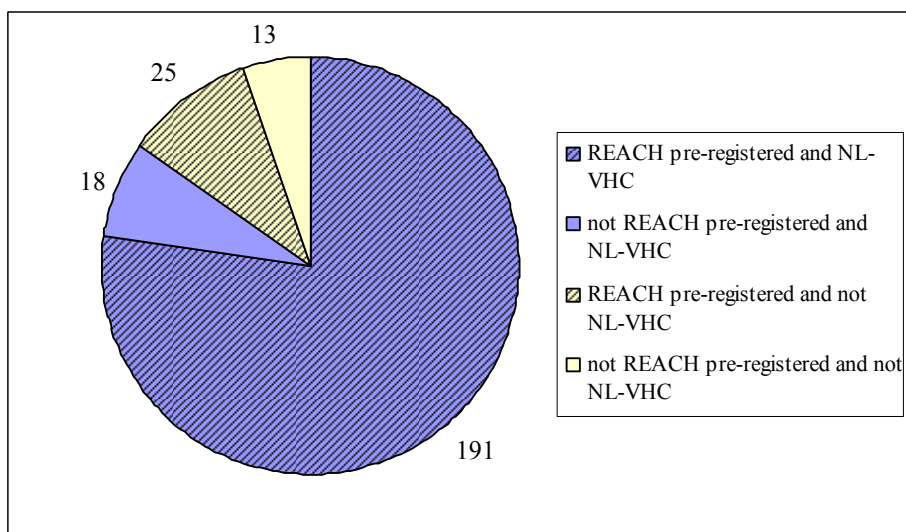
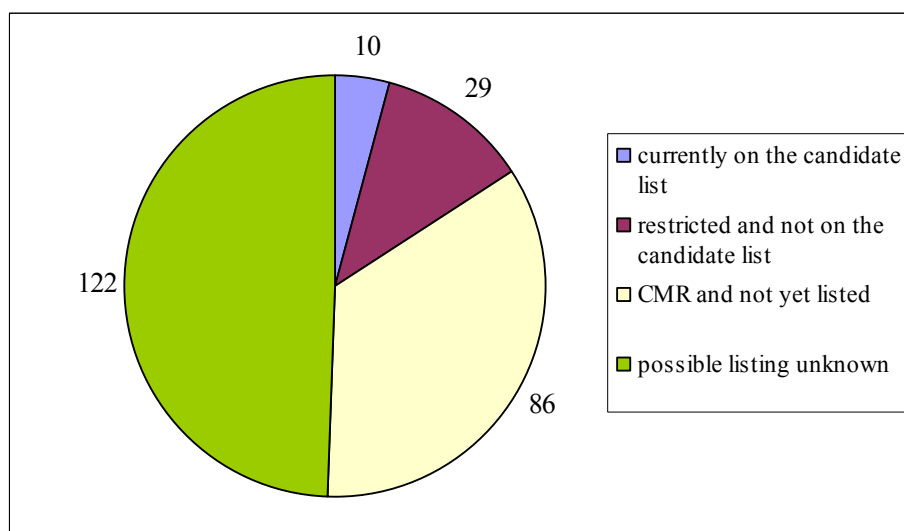


Figure 2 Relation between REACH pre-registration of NLpsl substances and their NL-VHC labelling (very high concern) in the Netherlands: dashed areas indicate REACH pre-registered substances.

Only the risk of pre-registered substances manufactured or imported in quantities of more than ten tonnes per year per manufacturer or importer will be fully assessed under REACH. When substances are placed on Annex XIV, assessment will be done already for quantities above one tonne per year. Currently, the list of candidate substances for Annex XIV consists of 30 substances of which 7 are prioritised. From the substances on the candidate list, ten are on the NLpsl including the seven prioritised substances. Extension of the candidate list is expected over the coming years. In this extension it is expected that at least a main part of substances with CMR properties will be proposed as SVHC. Substances with PBT, vPvB properties will also be proposed as SVHC, but it is currently unknown for the whole NLpsl which substances can be identified as SVHC. Figure 3 shows which part of the NLpsl is most likely to be listed in the REACH candidate list in due course, but this number will probably be bigger.



**Figure 3 Distribution of NLpsl substances over the candidate list for REACH Annex XIV (authorisation), Annex XVII (restriction) and substances with CMR characteristics that are likely to enter the candidate list at some point.**

Significant, but unquantifiable effects of REACH on the targets of the policy on Dutch priority substances are expected but at what time is unknown. It is already mentioned that substances on the candidate list should be notified if they are present in a product. This will create a negative image of the product and its use will presumably be reduced by market forces. By 2010 a lot of information will be generated by REACH on substances produced in amounts of more than 1000 tonnes per year and on SVHC substances in quantities of more than 1 tonne per year. The new information will not only be related to the toxicity of the registered substances, but will also provide details on the emission/exposure scenarios including recommended/implemented techniques and best environmental practises (BEP/BAT) for risk reduction. Authorities can use the information in granting of permits and this is expected to result in a better risk management and lower emissions for these substances and therefore lower environmental concentrations. Most of the exposure scenarios used in REACH are, however, (too) generic and do not allow use for permit granting since this concerns local scenarios. In terms of coverage of the NLpsl, it is presumed, for the reasons given above, that the SVHC candidate list will partially contribute (MPC level) to meeting the targets of the policy on Dutch priority substances (NC level). All the other effects of REACH are currently unsure and are not taken into account in terms of coverage.

### **2.2.8 EU Air Directive**

The EU Air Directive (EAD)(2008/50/EC) has been enforced in 2008. In this directive most of existing legislation has been merged into a single directive (except for the Fourth Daughter Directive) with no change to existing air quality objectives. This directive covers for seven substances on the NLpsl. The limit values should be reached by 2010, but in some cases a later time point is accepted for as long as Member States can prove that they make enough effort to reduce the air quality. The latter is however a complicated procedure. The limit values of this directive are not the same as the Dutch MPC, but are comparable and will replace the Dutch MPC in time. For some compounds the limits from this directive are still exceeded. Since the limit values of this directive are generally equal to or lower than the Dutch MPC, meeting the criteria for this directive will surely bring the average air concentration below the MPC. However, measures taken for this directive will not help to reach the NC.

### **2.2.9 Directive relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air**

This directive handles arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons (PAHs) in air and covers six substances on the NLpsl. This directive has been enforced in 2005 as the Fourth Daughter Directive under the former Air Framework Directive and is not part of the new Air Directive. The target values set in the directive for these substances should be reached by 2012. For arsenic and cadmium these are equivalent to the current NCs for these substances. For nickel and benzo(a)pyrene (as indicator for all PAHs) these are higher than the current NC. For mercury no target value is set in this directive. Therefore, this directive is considered to fully cover for the targets of the policy on Dutch priority substances for arsenic and cadmium only. Meeting the criteria for this directive will fulfil the requirement of the policy on Dutch priority substances for arsenic and cadmium with two years delay.

### **2.2.10 NEC Directive**

This EU Directive dates from 2001 and sets national emission ceilings for sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia to air (VROM, 2010a). The VOCs are defined by all organic compounds arising from human activities, other than methane, that are capable of producing photochemical oxidants by reactions with nitrogen oxides in the presence of sunlight. Since the VOCs covered by this directive are the same as covered by the VOC Directive, the number of substances on the NLpsl covered by this directive is 69. The European Commission is working on a proposal for new lower emission ceilings which should be reached by 2020. Member states exceeding these emission ceilings can be sanctioned by the EU. Member states also have to produce periodic reports on their progress in reaching the targets of the directive. The new lower emission ceilings for VOCs will contribute to reach the targets of the policy on Dutch priority substances, but since the targets are different, they are not a guarantee to reach the Dutch NC target.

### **2.2.11 Soil Framework Directive and Dutch soil policy**

In the year 2006, the EC has adopted a Soil strategy proposal to establish a Soil Framework Directive (SFD) (EC, 2010b). Whereas the European Parliament delivered its opinion on the European soil strategy proposal in first reading already in November 2007, the Council has not yet reached political agreement on the proposal at present. Therefore, the SFD has not been established and may not come into existence because of objections from several Member States, amongst which the Netherlands. Since this directive is not enforced yet and its future is uncertain, it will probably not contribute to the targets of the policy on Dutch priority substances.

The Dutch soil policy is based on the Decree on Soil Quality and is focusing on a more conscious and more sustainable use of the soil which is intended to retain the soil's practical value. The policy sets priority for the user as a point of departure. This means that the quality demands of a soil depend on the actual function of the soil. Because of this approach the soil compartment is not considered when assessing the policy status of the Dutch priority substances. Therefore, the Dutch soil policy is not considered in the analysis in this report.

### **2.2.12 Dutch 8.40-Decrees**

Environmental permits for companies are mainly based on the Dutch Law on Environmental Management and the Law on Pollution of Surface Water. Companies are exempt from permit application when they are covered by an 8.40-Decree (In Dutch: Algemene Maatregel van Bestuur - AMvB). Since 1 January 2008, 11 old 8.40-Decrees are combined in the 'Activities-Decree'. This Activity-Decree regulates environmental issues for certain economic sectors like catering, logistics, retail and non-agricultural companies. These companies are exempt from permit application, but do have to inform their local council of their activities. At the first of January 2010, about 385,000 companies in the Netherlands were covered by this decree, nevertheless about 42,000 companies still need an environmental permit (VROM, 2010b). In the new 8.40-Decrees since 2007 there will be requirements on emissions where relevant. Companies covered by the IPPC-Directive are not covered by the Activities-Decree.

The Activities-Decree covers companies that are not large sources of emission. Therefore this might be a useful tool for small sources of substances on the NLpsl that are not covered by the IPPC-Directive since emission requirement will be part of this new decree. By regulating emissions for these companies automatically through the Activities-Decree, more attention can be given to those companies with a high emission and companies covered by the IPPC-Directive.

## **2.3 Summary on the frameworks**

Table shows a summarizing overview of the frameworks described above: targets and environmental compartments involved, time frame including years of changes and legal status are given for each framework. The timeframes are also visualized in Figure 4 until 2025 because all target dates of the frameworks involved have been passed by then. This figure also includes the number of substances involved in each framework.. Changes in frameworks can consist of changes in the policy and/or changes in the substances list.

**Table 1 Summarizing overview of frameworks relevant to the Dutch list of priority substances**

<b>Framework</b>	<b>Target</b>	<b>Compartment</b>	<b>Time frame</b>	<b>Legal status</b>
NLpsl	NCs	whole environment	2010	guideline, no law
<i>Frameworks used to compose the NLpsl</i>				
<i>International</i>				
UNECE (POP)	ban	whole environment	2003	implemented as law
Stockholm (POP)	ban	whole environment	2010	implemented as law
OSPAR	minimalisation	marine environment	2020	implemented as law or through administrative action
<i>European Union</i>				
WFD	emission reduction/ stop/MPCs	freshwater	2015	implemented as law
<i>National</i>				
NeR	permits	air	from 1992, renewed in 2002	guideline, no law
<i>Frameworks linked to the NLpsl</i>				
<i>International</i>				
UNECE (HM)	emission reduction	air	from 1998	implemented as law
<i>European Union</i>				
1272/2008/EC	safety and information	whole environment	from 1976, renewed in 2008	law
IPPC	permits	air and water	from 1999, renewed in 2008	law
VOS	limitation	air	2007	implemented as law
E-PRTR and MJV	information	whole environment	1999 and 2009	law
REACH	regulation	whole environment	from 2009	law
EAD	limit values	air	2010	implemented as law
4th DD	NCs	air	2010	implemented as law
NEC	emission ceiling	air	2020	implemented as law
SFD	-	soil	not yet known	not existent
<i>National</i>				
8.40-Decrees	emission control	whole environment	renewed in 2007	law

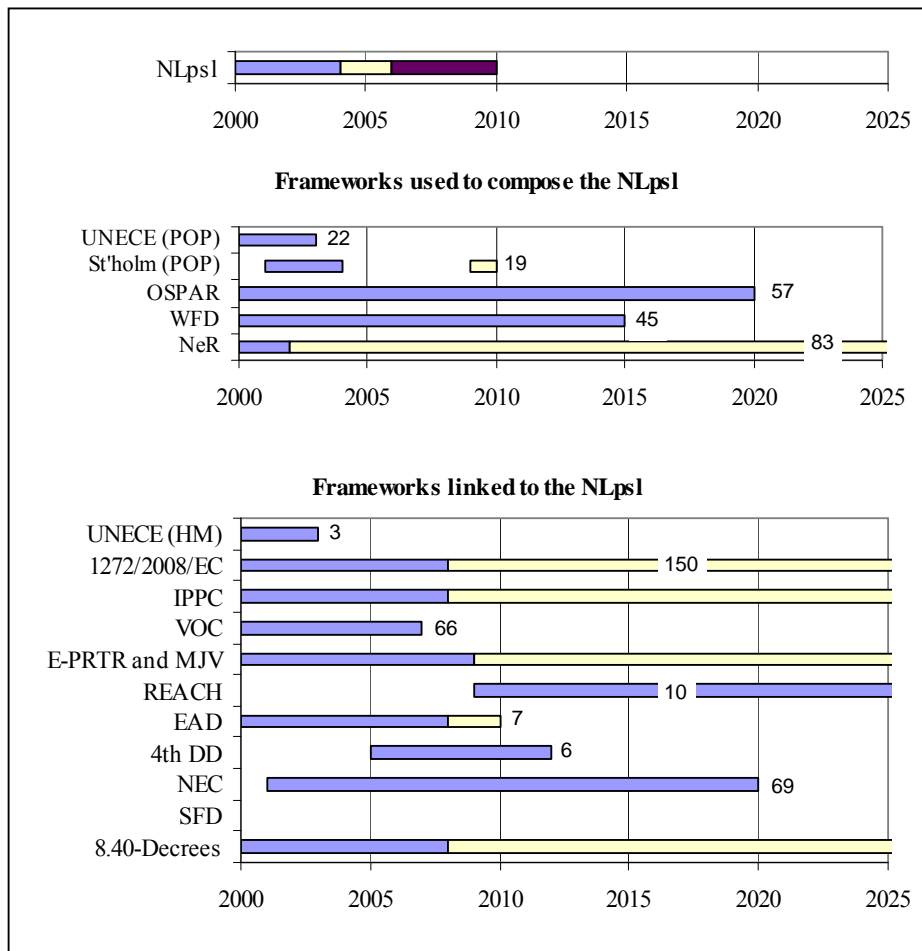


Figure 4 Overview of frameworks and their timeframes. Colour changes indicate changes in the framework. The numbers indicate the amount of substances on the NLpsI covered by the framework.

### **3 Interaction with and consequences for the policy on Dutch priority substances**

#### **3.1 Covering of the targets of the policy on Dutch priority substances by other frameworks**

##### **3.1.1 Definition of coverage**

The main question behind this study is to quantify to which extent the targets of the policy on Dutch priority substances for substances on the NLpsl are covered by the targets of other frameworks. The targets of the policy on Dutch priority substances are to reach negligible concentrations (NCs) in the whole environment by the year 2010. When another framework targets requires emission/production stops, this framework is considered to be fully covering for the NC targets of the policy on Dutch priority substances. The international frameworks do, however, not follow the Dutch NC approach, but handle targets equivalent to the MPC. Where the target of another framework is less strong than the NC or when only one environmental compartment is covered, this framework is considered to be covering only partially for the targets of the Dutch policy on priority substance. Emission/production stops may not be enough to reduce environmental concentrations of PBT and POP substances due to their persistence in the environment. Although the actual effect of emission/production stops on the environmental concentration of POP and PBT compounds is uncertain, it is nevertheless considered to cover for the targets of the policy on Dutch priority substances. When a substance is covered for water and air by two frameworks separately, it is considered to be covered for all environmental compartments. The Dutch national soil framework (Dutch Law on Soil Protection) is not considered in our analysis because of the difference in approach between the Dutch soil policy and the Dutch policy on priority substances (see section 2.2.11). Frameworks envisaging production/emission stops for one compartment are considered to cover for the whole environment, because production/emission stops will reflect on all compartments. Since most frameworks have a different time path than the policy on Dutch priority substances, time is not considered in this analysis. The effects of the different time paths is discussed in section 2.3. The following (inter)national frameworks were considered when checking the coverage:

#### *Full coverage*

- OSPAR production/emission stops, therefore considered to cover for NCs for the whole environment.
- UNEP and UNECE-POP production/emission stops, therefore considered to cover for NCs for the whole environment.
- WFD-prio production/emission stop for substances classified as priority hazardous substance, therefore considered to cover for NC level for the whole environment.

#### *Partial coverage*

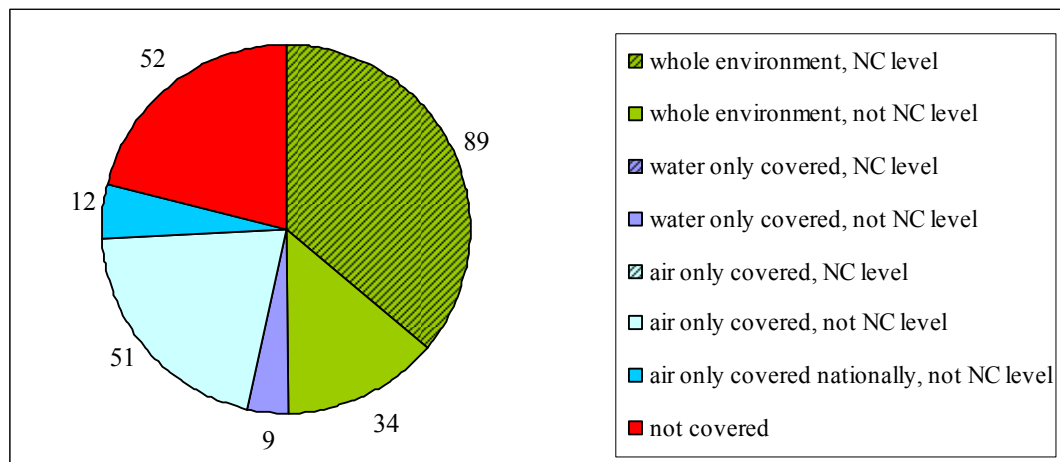
- WFD-reduction aiming at MPCs, therefore considered to cover partially for the water compartment.
- EU Air Directive targeting MPCs for the air compartment.
- Fourth Daughter Directive targets equivalent to the NCs for arsenic and cadmium but higher than NC for mercury, nickel and PAH/benzo(a)pyrene in the air compartment.
- REACH-SVHC list authorisations working to MPCs, therefore partial coverage for the whole environment.
- REACH restriction the effect of the restriction is unknown, therefore partial coverage for the whole environment.
- VOC Directive reduction of emissions, therefore partial coverage for the air compartment.
- NEC limit to emissions, therefore partial coverage for the air compartment.
- NeR best effort to minimise emissions, therefore partial coverage for the air compartment.

When a substance group is considered covered at some level, the individual substances from this group on the list are considered covered at the same level if this level is higher than that for the individual compound. Also, in the case of trichlorobenzenes, the group is on the list and so are all compounds from this group individually. Therefore, the group of trichlorobenzenes is considered to be covered fully because all three members of this group are. In the case of other groups, not all potential members of these groups are on the NLpsl as individual compounds and therefore this assumption is not made.

### **3.1.2 Results**

The results for the coverage by international and national frameworks are presented in Figure 5. Only 36% (89 substances) of the NLpsl can be considered to be covered by the (inter)national frameworks for the targets of the policy on Dutch priority substances in the whole environment. Around 43% (106 substances) of the substances is not covered for all environmental compartments or not for the targets of the policy on Dutch priority substances. Five percent of the substances on the NLpsl is covered by national legislation (the NeR) only, whereas 21% (52 substances) from the NLpsl are not covered by any framework.

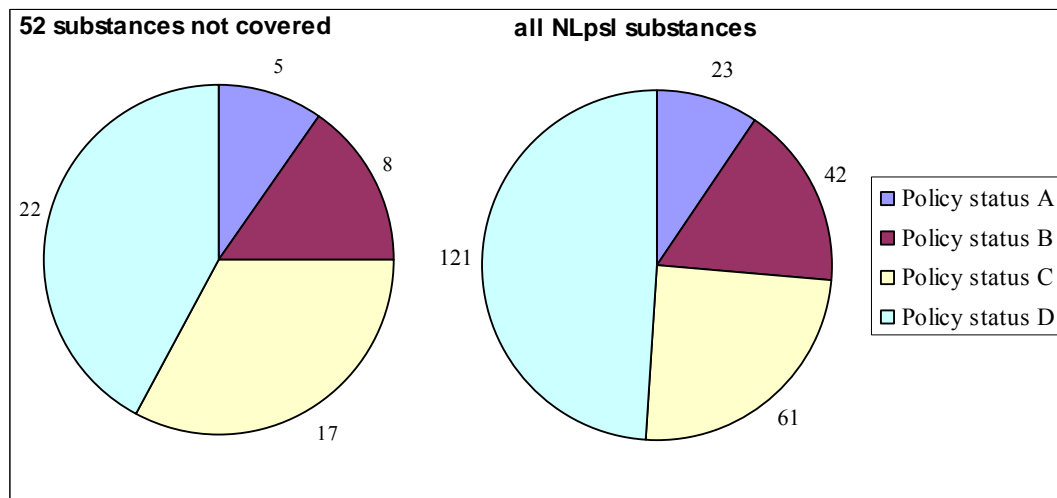
If the present target of the policy on Dutch priority substances would be MPC instead of NC, more compounds would be considered to be covered for this target. The group of uncovered substances would, however, remain the same.



**Figure 5 Coverage of the targets of the policy on Dutch priority substances by international and national frameworks: dashed areas indicate substances which are expected to reach NC levels for the indicated environmental compartment(s).**

As stated above, for 52 substances (21%) there is neither a contribution from international frameworks nor from the NeR. In Figure 6, an overview is given of the distribution of the substances over the four different policy statuses of the policy on Dutch priority substances (see section 1.1). Figure 6 shows that only for about 17 of the 52 remaining substances the environmental concentrations are below the NC as required by the targets of the policy on Dutch priority substances (policy status C). The other 35 of the remaining 52 substances have environmental concentrations (in at least one compartment) above NC or even MPC (policy status A and B) or there is not enough data on their environmental concentration (policy status D). This indicates that there is a group of 35 dangerous substances with a (possible) problem for the environmental or human health that is currently only dealt with in the policy on Dutch priority substances. A list of these substances is given in Appendix 4.

The 52 uncovered substances are on the NLpsl because they are NL-VHC classified and/or part of the old NLpsl of 50 substances originating from the NMP of 1988. From the 52 uncovered substances, 11 substances that are not NL-VHC, but part of the old NLpsl.



**Figure 6 Dutch policy status for 52 substances on the NLpsl not covered by international or national frameworks (as shown in Figure 5) and for all substances on the NLpsl respectively. Policy status A = environmental concentration > MPC, B = environmental concentration > NC, C = environmental concentration ≤ NC and D = environmental concentration unknown.**

#### **Future effect of REACH on not covered substances**

When most of the existing substances will be registered under REACH during the next decade, the information generated by implementation of REACH is expected to be used in permit handling (like the NLpsl) and thereby for many substances dealt with at MPC level. It is expected that most of the remaining substances (27 out of 35 substances with policy status A, B, or D) may become regulated under REACH in due time. At least 10 of these 27 substances have CMR properties according to Annex I of the former 67/548/EEC Directive respectively Annex VI of the EU Regulation 2008/1272/EC. For this classification they could be selected for being identified as SVHC and so may become subject for authorisation. Details on PBT/vPvB characteristics are not available under REACH at this moment, but may become available during registration. 25 out of the 27 are identified as NL-VHC in the Netherlands. According to the NL-VHC list 21 of these are CMR, 4 are vPvB and 1 both CMR and vPvB. There is a difference between Annex VI of 2008/1272/EC and the NL-VHC list in which substances are classified as CMR. It seems that the NL-VHC list is more conservative when classifying as CMR than done under the former 67/548/EEC Directive and taken over by the 2008/1272/EC Regulation. This difference could be explained by the fact that the NL-VHC list is also based on QSAR derived data and not only on experimentally derived data.

It should be added that it is currently unknown what the impact of REACH will be on the environmental concentrations of substances. This is because it is unknown how many substances will be identified for the candidate list, how many will actually be placed in Annex XIV and how many of the registered substances will provide a relevant chemical safety report. From the remaining eight substances or groups that seem not to be pre-registered under REACH, there are five chemical groups which cannot be checked because REACH registration is for individual substances only, but some members of these groups could be pre-registered. The remaining three substances are nitrate, phosphate and coarse dust. Nitrate and phosphate are on the NLpsl as nutrients and are probably pre-registered as their salts. Coarse dust is not a specific chemical substance and it is only regulated through the NLpsl.

### Coverage per Dutch policy status

The Dutch policy status (see section 1.1) is an indicator for the extent of the environmental problem of a substance. Therefore, a similar analysis as performed above is also made for every policy status separately (Figure 7). From this analysis it can be seen that the largest groups for each policy status separately are coverage for the whole environment at NC level (dashed areas) or no coverage at all (red area). In general there is no striking difference between the policy statuses. It should be noted that the policy status D contains the highest number of substances (see Figure 6, all NLpsl substances) and that the number of substances is decreasing from D to A (121-61-42-23). The consequences for every different policy status are discussed below.

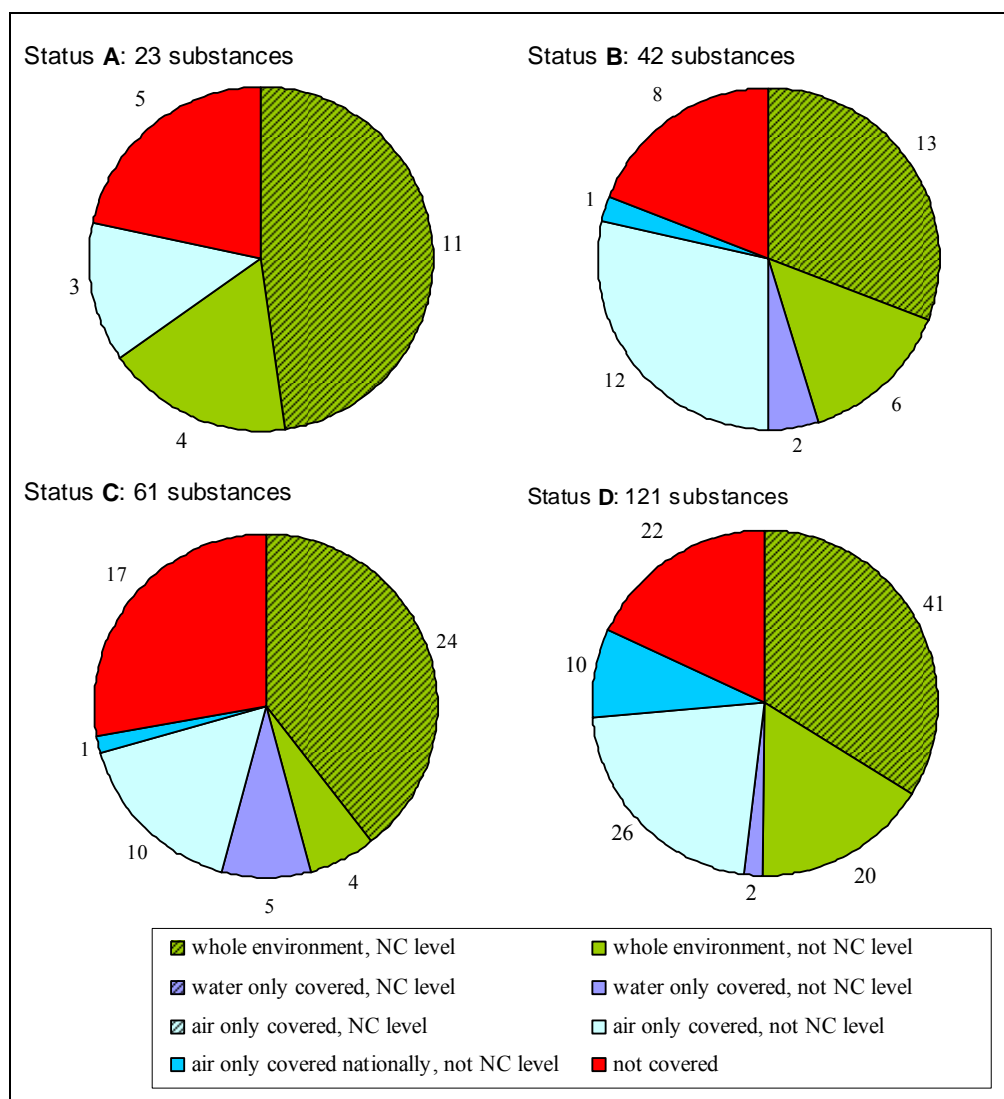


Figure 7 Coverage of the targets of the policy on Dutch priority substances by international and national frameworks divided per policy status. Policy status A = environmental concentration > MPC, B = environmental concentration > NC, C = environmental concentration ≤ NC and D = environmental concentration unknown.

### **Policy status A**

In 2006, 23 of the substances included in the underlying analysis had status A, which means that their concentrations in water and/or air did not meet the Maximum Permissible Concentration level (MPC). In Figure 7 (A) can be seen that 11 substances of this group will potentially reach the NC level by means of international frameworks for the whole environment. Although the substances had status A in 2006, it may be expected that the measures, initiated by the frameworks, on the long term will lead to reaching the NC level. However, there could be underlying reasons why the NC is or cannot be reached because the covering different frameworks may not meet all of their own targets. The 12 remaining substances with status A are not expected to reach the NC level through the overlying (inter)national frameworks or because frameworks are lacking. They are divided over three groups:

- four substances for which the overlying frameworks cover the whole environment for a target higher than the NC level;
- three substances that are covered by (inter)national frameworks for air only;
- five substances that are not covered by any framework.

For these 12 substances at first the relevance of these substances for the Netherlands should be determined considering their current use and environmental concentration. Thereafter maybe additional measures should be taken to reach the desired status C (NC level), especially for the five substances without covering frameworks.

### **Policy status B**

In 2006, 42 of the substances included in the underlying analysis had status B, which means that their concentrations in water and/or air were between the Maximum Permissible Concentration level (MPC) and the Negligible Concentration level (NC level = target of the policy on Dutch priority substances). In Figure 7 (B) can be seen that 13 substances of this group will potentially reach the NC level by means of (inter)national frameworks for the whole environment (13). Although the substances had status B in 2006, it may be expected that the measures, initiated by the frameworks, on the long term will lead to meeting the targets of the policy on Dutch priority substances. The 29 remaining substances with status B are not expected to reach the NC level through the overlying (inter)national frameworks or because frameworks are lacking. They are divided over three groups:

- 6 substances for which the overlying frameworks cover the whole environment for a target higher than the NC level;
- 15 substances that are covered by national or international frameworks for only water (2) or air (13);
- 8 substances that are not covered by any framework.

For these 29 substances at first the relevance of these substances for the Netherlands should be determined considering their current use and environmental concentration. Thereafter maybe additional measures should be taken to reach the desired status C (NC level), especially for the eight substances without covering frameworks.

### **Policy status C**

In 2006, 61 of the substances included in the underlying analysis had status C, which means that their concentrations in water and/or air were below the Negligible Concentration level (NC level = target of the policy on Dutch priority substances). From Figure 7 (C), it can be seen that 28 substances already at NC level are also included in whole coverage frameworks (OSPAR, UNEP- and UNECE-POP, REACH and the WFD). Another 16 substances are covered by frameworks for only air or water. The 17 remaining substances are not covered by any framework.

Of the substances in group C of this analysis most of them (41) are at present not produced, used or allowed in the Netherlands anymore, so environmental concentrations below the NC level could be expected. However, some of these substances can also be introduced in the Netherlands from abroad by transport in water or air, but this did not lead to higher levels than NC level as shown by Figure 7 (C).

#### Policy status D

In 2006, 121 of the substances included in the present analysis had status D, which means that there is no information on their environmental status. From Figure 7 (D), it can be seen that 41 substances of this group (34%) will potentially reach the NC level by means of (inter)national frameworks for the whole environment. This means that, although information was lacking in 2006 to determine their status according to environmental concentrations, for 41 of the D substances the NC level will probably be reached on the long term. If targets according to these frameworks are really realised, these 41 substances could have a lower priority for policy setting for the NLpsl. So the attention can mainly be paid to the remaining other D substances.

Of the remaining 80 D substances, 58 substances are covered for one or more environmental compartments (20 for the whole environment, two for only the water compartment and 36 for or only the air compartment), but they will not reach the NC level by the covering frameworks. The last group of 22 substances is not covered by any framework at all and it is not clear whether they already meet the NC level in 2006 due to lack of sufficient information. For at least some of the 80 substances it is expected that additional measures are necessary in the future. First, additional information gathering is required to determine whether they meet the NC level (status C) or not (status A or B).

An overview of the distribution of the substances of the different policy statuses and their coverage is given in Table 2. From this overview, it can be seen that for 24 of the substances in the underlying analysis (10%) which in 2006 clearly did not meet the NC level, it is expected that they will meet this criterion on the long term without additional measures (status A and B – full coverage). For another 41 substances (environmental problem in 2006 unclear) this is also expected (with status D – full coverage). This means that for 65 (26%) of the substances with status A, B or D the NC level criterion is expected to be reached due to measures taken by overlying frameworks (substances with full coverage). It will, however, be necessary to check if these measures are really realised. Otherwise additional actions would still be necessary if targets of the policy on Dutch priority substances are to be met.

**Table 2 Distribution of the substances of the NLpsl over the different policy statuses.**

	full coverage		partial coverage		not covered	
A	11	(4%)	7	(3%)	5	(2%)
B	13	(6%)	21	(8%)	8	(3%)
C	24	(10%)	20	(8%)	17	(7%)
D	41	(17%)	58	(23%)	22	(9%)

For 86 substances that did not meet the NC level (status A and B – partial coverage) or of which the environmental status is unknown (status D – partial coverage) in 2006, it is expected that the (inter)national frameworks will contribute to the targets of the policy on Dutch priority substances. But more severe action may be necessary for these substances. There are 35 substances with policy status A, B or D for which there is no contribution towards meeting the targets of the policy on Dutch priority substances (substances not covered). A list of these substances is given in Appendix 4.

## 3.2 Future of the NLpsl

This study shows that the NLpsl is currently not fully covered by the other frameworks. It is expected that in the future this coverage will be increased by REACH at the MPC level, but the actual impact of REACH is currently unclear. Therefore, when the Dutch policy makers still want to address the original targets of the policy on Dutch priority substances, continuation of the NLpsl policy is advised. The NLpsl will also be a useful tool for the Dutch input in REACH for priority setting of substances for the candidate list for restriction and inclusion of Annex XIV. By the time that REACH gets into effect, it might be considered if the NLpsl should mainly focus on chemicals that are not covered by REACH (non production and non trade chemicals). If continuation of the NLpsl is considered (with the same general targets) an update is recommended since the last update of the NLpsl was four years ago (2006). Substance lists from some frameworks are changing regularly and are not fully covered by the NLpsl anymore. The latter is demonstrated in Appendix 2. This list could be used as basis for consideration of which substances should be added to the NLpsl. If the policy makers wish to keep a more manageable list, it should also be considered to create an additional status marker (for example \*) for substances of which the production and use is already forbidden. This additional status would indicate a lower priority for policy setting.

## 4 General conclusions and recommendations

The following questions were addressed in this study on the interactions between the policy on Dutch priority substances and other (inter)national chemical policy frameworks:

1. Do other (inter)national frameworks generally affect or support the policy on Dutch priority substances? If yes, what is the quantitative breakdown of substances on the Dutch priority substance list and targets of the policy on Dutch priority substances covered by existing and new (inter)national frameworks?
2. Should the current Dutch national priority substances list be revised due to the emergence of new relevant substances from these other (inter)national frameworks or because some of the substances on the list may no longer be relevant.

It is realised that a number of key assumptions in this study are arbitrary and may contain imponderables. For example, the issue of ‘coverage’ by the other policy frameworks. Despite these uncertainties it is felt, however, that general conclusions can be drawn at a higher level of integration.

1) The current target for the policy on Dutch priority substances is to reach the Negligible Concentration (NC) in 2010. The Negligible Concentration is a Dutch policy for reaching the long-term environmental quality objective and is generally determined as the Maximum Permissible Concentration (MPC)/100.

The main conclusion of this study is that for around one third of the Dutch priority substances (89 of the 247 substances on the NLpsl) the NC target could be or has been realised through the measures of international frameworks (OSPAR, Stockholm POP Convention, UNECE-POP Protocol and Water Framework Directive priority substances). This conclusion could be made because these compounds are covered by these other frameworks and, in addition, these frameworks do have more or less equal targets. It has to be noted, however, that for a number of chemicals, the deadline for meeting the Dutch policy goal (2010) may only be reached at a later stage (at last by the year 2020).

For the remaining two third of the Dutch priority substances the target is currently not (yet), or not sufficiently, supported by other (inter)national frameworks because, for example, these frameworks do not set targets on the basis of a negligible concentration. More than half of these substances with insufficient support may cause environmental problems according to their Dutch policy status (A, B and D). In the (near) future, REACH will get its effects on the targets of the policy on Dutch priority substances, including most of the current ‘non-covered’ substances. Most of the expected effects of REACH can, however, not yet be quantified. Until the effects of REACH are clear, a large part of the substances on the NLpsl would not be covered by any legislation if the NLpsl would not be continued. From that point of view continuation of the current policy on priority substances is recommended. Environmental monitoring or estimating the environmental concentration is necessary to underpin this policy. A large deal of substances with unknown environmental status (policy status D), however, is covered by the (inter)national frameworks and therefore monitoring of these substances may have a lower priority.

2) In the case that it is decided to continue the NLpsl, an update of the NLpsl is recommended since many of the connected frameworks have changed significantly since the last update. In case of an update, further elaboration of the results of this study into a higher detail level (at individual substance level) is recommended to support the update of the list and further policy development. In this update an additional status should be considered for substances that need less attention. This implicitly generates a better focus on those substances that need the most attention. The impact of REACH deliveries on the policy on Dutch priority substances should be monitored at regular intervals.

## References

- Bodar C.W.M., M.P.M. Janssen, P.G.P.C. Zweers, D.T.H.M. Sijm. (2010) Interactions REACH and other chemical legislation - Setting of environmental quality standards. RIVM, Report no. 601357001, Bilthoven.
- EC. (2010a) Website of the Directorate General for the Environment of the European Commission - [ec.europa.eu/dgs/environment](http://ec.europa.eu/dgs/environment). Brussels, Access date: January, 2010.
- EC. (2010b) Website of the Directorate General for the Environment of the European Commission - Section on soil policy - [ec.europa.eu/dgs/environment/soil](http://ec.europa.eu/dgs/environment/soil). Brussels, Access date: January, 2010.
- ECHA. (2010) Website of the European Chemicals Agency - [echa.europa.eu](http://echa.europa.eu). Helsinki, Access date: January, 2010.
- Lepper F. (2005) Manual on the Methodological Framework to Derive Environmental Quality Standards for Priority Substances in accordance with Article 16 of the Water Framework Directive (2000/60/EC). Fraunhofer-Institute Molecular Biology and Applied Ecology, Schmallenberg.
- OSPAR. (2009) Website of the OSPAR commission - [www.ospar.org](http://www.ospar.org). London, Access date: November, 2009.
- UNECE. (2009) Website of the United Nations Economic Commission for Europe - [www.unece.org](http://www.unece.org). Geneva, Access date: November, 2009.
- UNEP. (2009) Website of the Stockholm Convention - [chm.pops.int](http://chm.pops.int). Geneva, Access date: November, 2009.
- US EPA. (2009) EPI Suite (computer program). Version 4.0. Washington, DC, U.S. Environmental Protection Agency (EPA) Office of Pollution Prevention Toxics and Syracuse Research Company (SRC).
- VROM. (2001) Strategienota omgaan met stoffen. Ministry of Housing, Spatial Planning and the Environment, The Hague.
- VROM. (2006) Voortgangsrapportage milieubeleid voor Nederlandse prioritaire stoffen. Ministry of Housing, Spatial Planning and the Environment, The Hague.
- VROM. (2007) Uitvoeringsprogramma diffuse bronnen waterverontreiniging. Ministry of Housing, Spatial Planning and the Environment, The Hague.
- VROM. (2010a) Website of the Dutch ministry of Housing, Spatial Planning and the Environment - Section on laws and regulations on air quality - [www.vrom.nl/pagina.html?id=12330](http://www.vrom.nl/pagina.html?id=12330). The Hague, Access date: January, 2010.
- VROM. (2010b) Website of the Dutch ministry of Housing, Spatial Planning and the Environment - [www.vrom.nl](http://www.vrom.nl). The Hague, Access date: January, 2010.



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## Appendix 1 Dutch list of priority substances and its relation to other frameworks

CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note	
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex I	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMVOs	NEC	Very high risk	MVP1			MVP2
16984-48-8	anorganic fluorides		19										n						x	x		A	
7440-38-2	arsenic and arsenic compounds		5					x					y						x	x		B	2,3
1303-28-2	diarsenic pentaoxide			74				x					y									D	
1327-53-3	diarsenic trioxide			82				x					y									D	
7778-39-4	arsenic acid			185				x					y									D	
7778-44-1	calcium arsenate			186				x					y									C	
7784-40-9	lead hydrogen arsenate			188				x					y									D	4
7440-41-7	beryllium and beryllium compounds			171				x					y						x			D	2,3
1304-56-9	beryllium oxide			75				x					y						x			D	
7440-43-9	cadmium and cadmium compounds		8					pg	x				y							x	x	B	2,3
7790-79-6	cadmium fluoride			189									y									C	
1306-23-6	cadmium sulphide			76									y									C	
	chlorofluorocarbons (CFCs)		12																	x		C	
	chlorinated anilines		9																	x		B	
	chlorinated benzenes		10																	x	x	B	
12002-48-1	trichlorobenzenes				x	x							y									C	3
108-70-3	1,3,5-trichlorobenzene			61									y	x	x							C	
120-82-1	1,2,4-trichlorobenzene			68				x	x				y	x	x				x			C	
87-61-6	1,2,3-trichlorobenzene				x				x				y	x	x							C	
	(other chlorinated benzenes)																						1
106-46-7	1,4-dichlorobenzene		10										y	x	x							D	
118-74-1	hexachlorobenzene			67				pg		x	x	x		y								A	

CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note					
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex 1	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMIVOS	NEC	Very high risk	MVP1			MVP2	Air	Water		
608-93-5	pentachlorobenzene			159		pg		x	x						y									B	13		
	chlorinated phenols		11																					B			
87-86-5	pentachlorophenol	PCP		201		x	x			x				y									x	x	B		
7440-47-3	chromium and chromium compounds		13											y									x	x	C	2,3	
14977-61-8	chromyl dichloride			92						x				y											C		
1333-82-0	chromiumoxide			83						x				y											D		
7738-94-5	chromic acid			181						x				y											D		
7778-50-9	potassium dichromate			187						x				y											D		
18540-29-9	chromium (VI)-compounds			99									x	y									x		D	2,3	
	(DDT and DDT derivatives)																								1		
53-19-0	DDD, 2,4'-isomer	mitotane		146										y											B		
72-54-8	DDD, 4,4'-isomer	TDE		168										y											B		
3424-82-6	DDE, 2,4'-isomer			130										y											B		
72-55-9	DDE, 4,4'-isomer			169										y											B		
789-02-6	DDT, 2,4'-isomer			190										y									x		B	8	
50-29-3	DDT, 4,4'-isomer	clofenotane		139				x	x	x				y									x		B	8	
	(dioxins and furans)																									1	
	dioxins		16							x	x													x	x	C	3
	polychlorinated dibenzo-p-dioxins	PCDD's		211				x	x	x													x		x	C	3
	polychlorinated dibenzo-p-furans	PCDF's		210				x	x	x													x		x	C	3
	(drins)																									1	
309-00-2	aldrin			125						x	x	x			y	x	x							x		B	8
60-57-1	dieldrin					x				x	x	x			y	x	x									B	8
72-20-8	endrin					x				x	x	x			y	x	x									B	8
465-73-6	isodrin			135								x			y	x	x								x	B	8,10
115-29-7	endosulfan					x	pg	x				x			y											A	8
959-98-8	alpha-endosulfan					x	pg								n											A	8
	phenols		18																					x	x	D	
25154-52-3	nonylphenols					x	pg	x				x			y											D	
	nonylphenol/ethoxylates and related compounds	NP/NPE's				x		x					x													D	
104-40-5	p-nonylphenol					x	pg	x						y												D	

CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note		
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex 1	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMIVOS	NEC	Very high risk	MVP1			MVP2	Air
1806-26-4	octylphenols				x	x	x							y									D	
140-66-9	para-tert-octylphenol		90			x	x							y			NL-VHC	x					D	
732-26-3	dodecylphenol	2,4,6-tri-tert-butylphenol	170				x							y			NL-VHC						D	
	particulate matter		39								x									x			A	15
	phosphates		20																		x		A	
	phthalates		21																				B	
117-81-7	bis(2-ethylhexyl) phthalate	DEHP			x	x	x		x			x	x	y			NL-VHC	1			x		B	14
84-74-2	dibutyl phthalate	DBP			x		x		x			x	x	y			NL-VHC	1					B	14
	brominated flame retardants				x		x										NL-VHC						D	3
	brominated diphenyl ethers				x	pg	x										NL-VHC						D	3
32534-81-9	pentabromodiphenyl ether	penta-BDE	127			x		x	x			x		y			NL-VHC	x					D	
	(other brominated flame retardants)																							1
36355-01-8	hexabromo-1,1'-biphenyl				x			x	x					y			NL-VHC						D	13
85-22-3	pentabromoethylbenzene		198				x							y			NL-VHC	x					D	10
59447-55-1	(pentabromophenyl)methyl acrylate		154				x		x					y			NL-VHC						D	10
79-94-7	tetrabromobisphenol A	TBBP-A			x		x							y									D	
36065-30-2	1,3,5-tribromo-2-(2,3-dibromo-2-methylpropoxy)benzene		132				x							y			NL-VHC		x				D	10
	(chlorinated/brominated aliphatic hydrocarbons)																							1
85535-84-8	C10-13-chloro alkanes		199			pg	x		x			x	x	y			NL-VHC	x					D	3
	(other chlorinated/brominated aliphatic hydrocarbons)																							1
74-83-9	bromomethane	methylbromide	29	172										y	x	x	NL-VHC				x		C	8
106-93-4	1,2-dibromoethane			57					x					y	x	x	NL-VHC						D	
107-06-2	1,2-dichloroethane		14			x			x					y	x	x	NL-VHC			x	x	x	A	
75-09-2	dichloromethane		15			x			x					y	x	x				x	x		C	
87-68-3	hexachlorobuta-1,3-diene			200		pg								y	x	x	NL-VHC		x		x		D	
76-01-7	pentachloroethane			177					x			x		y	x	x	NL-VHC						D	
79-34-5	1,1,2,2-tetrachloroethane			193					x			x		y	x	x	NL-VHC						D	

CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note	
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex 1	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMIVOS	NEC	Very high risk	MVP1			MVP2
127-18-4	tetrachloroethylene	PER	42						x					y	x	x				x	x	B	
56-23-5	carbon tetrachloride		43						x					y	x	x				x	x	B	
71-55-6	1,1,1-trichloroethane		44						x					y	x	x				x	x	C	
79-01-6	trichloroethylene		45						x					y	x	x				x	x	C	
67-66-3	trichloromethane	chloroform	46						x			x		y	x	x				x	x	B	
593-60-2	bromoethylene	bromoethene	47	153					x					y	x	x						C	
75-01-4	chloroethylene	chloroethene							x			x		y	x	x				x	x	B	
	<i>(glycol ethers)</i>																						1
110-80-5	2-ethoxyethanol			64					x					y	x	x						D	
111-15-9	2-ethoxyethyl acetate			65					x					y	x	x						D	
109-86-4	2-methoxyethanol			62					x					y	x	x						D	
110-49-6	2-methoxyethyl acetate			63					x					y	x	x						D	
1589-47-5	2-methoxypropanol			95					x					y	x	x						D	
	coarse dust		40																	x		D	15
608-73-1	hexachlorocyclohexane	BHC; HCH	22	158			pg	x	x	x	x			y	x	x				x	x	B	7
58-89-9	gamma-hexachlorocyclohexane	lindane; gamma-HCH; gamma-BHC			x		pg	x	x	x	x			y	x	x						B	8, 13
	<i>(cobalt compounds)</i>																						1
10124-43-3	cobalt sulphate			54					x					y								D	
7646-79-9	cobalt dichloride			179					x					y								D	
7440-50-8	copper and copper compounds		24											y						x	x	A	2
7439-97-6	mercury and mercury compounds		25				pg		x		x	x		y						x	x	B	2,3
	mercury and organomercury compounds				x			x			x											D	2,3
7439-92-1	lead and lead compounds		26					x	x		x	x		y						x	x	B	2,3
	lead and organolead compounds				x			x														D	2,3
1335-32-6	lead_bis(acetato-O)tetrahydroxytri-			85					x					y								D	
301-04-2	lead di(acetate)			123					x					y								D	
10190-55-3	lead molybdate			55					x					y								D	5
37240-96-3	dilead dirhodium heptaoxide			133					x					y								D	6
7440-02-0	nickel and nickel compounds		31					x		x	x	x		y						x	x	A	2,3
1314-06-3	dinickel trioxide			78					x					y								D	



CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note	
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex 1	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMIVOS	NEC	Very high risk	MVP1			MVP2
	<b>polyaromatic hydrocarbons</b>	PAHs	35			pg	x		x											x		A	3
120-12-7	anthracene				x	pg						x	y									D	
56-55-3	benz[a]anthracene		151						x			x	y							x	x	D	
50-32-8	benzo[a]pyrene, benzo[def]chrysene		35	140		pg			x	x	x	x	y						x	x	x	A	
205-99-2	benzo[e]acephenanthrylene		110			pg			x	x	x	x	y						x		x	D	
192-97-2	benzo[e]pyrene		106						x		x	x	y									D	
191-24-2	benzo[ghi]perylene		103			pg							y						x		x	D	
205-82-3	benzo[j]fluoranthene		109						x		x	x	y						x			D	
207-08-9	benzo[k]fluoranthene		112			pg			x	x	x	x	y						x	x	x	D	
218-01-9	chrysene		114						x		x	x	y						x			D	
226-36-8	dibenz(a,h)acridine		117										n						x			D	
224-42-0	dibenz(a,i)acridine		116										n						x			D	
192-65-4	naphtho[1,2,3,4-def]chrysene		105										y						x			D	
53-70-3	dibenz[a,h]anthracene		148						x		x	x	y						x			D	
189-64-0	dibenzo[b,def]chrysene		101										y						x			D	
189-55-9	benzo(r,s,t)pentaphene		100										y						x			D	
191-30-0	dibenzo[def,p]chrysene		104										y						x			D	
85-01-8	phenanthrene		197										y							x		D	
206-44-0	fluoranthene		35	111		x							y						x	x	x	D	
194-59-2	7H-dibenzo[c,g]carbazole		108										y						x			D	
193-39-5	indeno[1,2,3-cd]pyrene		107			pg			x				y						x			D	
91-20-3	naphthalene				x	x			x				y									D	
	<b>polychloronaphthalenes</b>				x		x															D	3
32241-08-0	heptachloronaphthalene		126				x						y						x			D	10
1335-87-1	hexachloronaphthalene		86				x						y						x			D	10
2234-13-1	octachloronaphthalene			x			x						y									D	10
1321-64-8	pentachloronaphthalene		80			x			x				y						x			D	10
1335-88-2	tetrachloronaphthalene		87				x						y						x			D	10
1321-65-9	trichloronaphthalene		81				x						y						x			D	10
70776-03-3	naphthalene, chloro derivs.				x	x							y									D	3,10
7440-66-6	<b>zinc and zinc compounds</b>		48										y							x	x	A	2





CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note		
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex 1	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMIVOS	NEC	Very high risk	MVP1			MVP2	Air
75-12-7	formamide			174																			D	
77-47-4	hexachlorocyclopentadiene	HCCP		182																			C	12
335-57-9	perfluoroheptane			129																			D	
107-46-0	hexamethyldisiloxane	HMDS			x																		D	12
302-01-2	hydrazine			124																			D	
123-31-9	hydroquinone	1,4-benzenediol; 1,4-dihydroxybenzene		71																			D	
7758-01-2	potassium bromate			183																			D	
630-08-0	carbon monoxide		23																				B	
75-15-0	carbon disulphide			175																			D	
625-45-6	methoxyacetic acid			163																			D	
95-53-4	o-toluidine			206																			D	
81-15-2	musk xylene				x																		D	
127-19-5	N,N-dimethylacetamide			73																			D	
68-12-2	N,N-dimethylformamide			165																			D	
91-59-8	2-naphthylamine			204																			C	
51000-52-3	vinyl neodecanoate			142																			D	
98-95-3	nitrobenzene			209																			D	
79-46-9	2-nitropropane			194																			C	
79-16-3	N-methylacetamide			191																			D	
10028-15-6	ozone		34																				B	
1825-21-4	pentachloro-anisole			97																			C	10
133-49-3	pentachlorobenzenethiol			84																			C	
10043-92-2	radon			37																			C	
11104-93-1	nitrogenoxides	NOx		38																			A	
100-42-5	styrene			41																			B	
69029-86-3	slags, tellurium																						C	
108-88-3	toluene	methylbenzene		28																			B	

CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR		MJV		policy status	Note					
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex 1	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list	REACH pre-registered (y/n = yes/no)		NMIVOS	NEC	Very high risk	MVP1			MVP2	Air	Water		
823-40-5	2-methyl-m-phenylenediamine			196					x					y											C		
91-08-7	2-methyl-m-phenylene diisocyanate			203					x					y												D	
98-07-7	$\alpha,\alpha,\alpha$ -trichlorotoluene			208					x					y	x	x										C	
355-43-1	1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-6-iodohexane			131										y	x	x										C	
603-35-0	triphenylphosphine			156										y							x					D	
2314-97-8	trifluoriodomethane			119					x					y	x	x										C	
55525-54-7	3,3'-(ureylenedimethylene)bis(3,5,5-trimethylcyclohexyl) diisocyanate			149										y							x					C	10
1314-62-1	vanadium pentoxide			79					x					y												D	
7446-09-5	sulphur dioxide		49						x	x				y		x						x				B	
7783-06-4	hydrogen sulphide		50						x					y								x	x			D	

pg = priority hazardous substance

#### Notes

- 1 This substance group has been placed on the list for clarification but is as such not part of the NLpsl.
- 2 The CAS number is related to the metal only and not to this group of metal compounds.
- 3 All or most of the substances in this group are classified as NL-VHC.
- 4 This substance is also a lead compound.
- 5 This substance is also a molybdenum compound.
- 6 This substance is also a rhodium compound.
- 7 Covering all isomers of HCH (hexacyclohexane).
- 8 This substance (group) is also part of the group of crop protection products and biocides.
- 9 To avoid confusion other substances or substance groups have not been placed under this substance group.
- 10 Statement on OSPAR list: no background doc because currently no production or use interest.
- 11 Statement on OSPAR list: no background doc because intermediate in closed system.
- 12 Deselected from OSPAR list.
- 13 Since 26 August 2009 on the Stockholm list.
- 14 These compounds have been added to the MVP compounds in 2009.
- 15 NL-VHC-criteria are not applicable to this substance.



CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists								NL-VHC	NeR			MJV	
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex I	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)		REACH Annex XIV candidate list (SVHC)	REACH pre-registered (y/n = yes/no)	Very high risk	MVP1	MVP2
56-35-9	bis(tributyltin)oxide	TBTO										x	y						
85-68-7	benzyl butyl phthalate	BBP										x	y						
90640-80-5	anthracene oil											x	y						
91995-17-4	anthracene oil, anthracene paste, distn. Lights											x	y						
91995-15-2	anthracene oil, anthracene paste, anthracene fraction											x	y						
90640-82-7	anthracene oil, anthracene-low											x	y						
90640-81-6	anthracene oil, anthracene paste											x	y						
84-69-5	diisobutyl phthalate											x	y						
	aluminosilicate, Refractory Ceramic Fibres											x							
	zirconia Aluminosilicate, Refractory Ceramic Fibres											x							
7758-97-6	lead chromate											x	y						
12656-85-8	lead chromate molybdate sulfate red (C.I. Pigment Red 104)											x	y						
1344-37-2	lead sulfochromate yellow (C.I. Pigment Yellow 34)											x	y						
79-06-1	acrylamide											x <sup>a</sup>	y						
115-96-8	tris(2-chloroethyl)phosphate											x	y						
65996-93-2	coal tar pitch, high temperature											x	y						
	polybromodibenzodioxins																	x	
	polybromodibenzofurans																	x	
	polyhalogen-dibenzodioxins																	x	
	polyhalogen-dibenzofurans																	x	
382-21-8	perfluoroisobutene																	x	
126-72-7	tris (2,3 dibromopropyl) phosphate											x	y						
5455-55-1	tris(aziridinyl)phosphin oxide											x	n						
59536-65-1	polybromobiphenyls; polybrominatedbiphenyls (PBB)											x	n						
92-87-5	benzidine											x	y						
552-89-6	o-nitrobenzaldehyde											x	y						
12135-76-1	ammonium sulphide											x	y						
12124-99-1	ammonium hydrogen sulphide											x	y						
9080-17-5	ammonium polysulphide											x	y						

CAS-no	Substance name	Synonym	NL priority substance			Presence at international substance lists										NL-VHC	NeR	MJV	
			Old priority substance	Additional priority substance	new added (2006)	KRW priority	OSPAR priority	UNEP-POP (Stockholm)	UNECE-POP	67/548 Annex I	EU Air Directive	4th Daughter Directive	REACH Annex XVII (restriction)	REACH Annex XIV candidate list (SVHC)	REACH pre-registered (y/n = yes/no)			Very high risk	MVP1
96-32-2	methyl bromoacetate												x	y					
105-36-2	ethyl bromoacetate												x	y					
35223-80-4	propyl bromoacetate												x	n					
18991-98-5	butyl bromoacetate												x	y					
92-93-3	4-nitrobiphenyl												x	y					
92-67-1	4-aminobiphenyl xenylamine												x	y					
598-63-0	neutral anhydrous lead carbonate (PbCO3)												x	y					
1319-46-6	trilead-bis(carbonate)-dihydroxyde												x	y					
7446-14-2	lead sulphate (Pb SO4)												x	y					
15739-80-7	lead sulphate (Pbx SO4)												x	y					
75113-37-0	di-μ-oxo-di-n-butylstanniohydroxyborane	dibutyltin hydrogen borate; DBB											x	n					
76253-60-6	monomethyl-tetrachlorodiphenyl methane												x	y					
	monomethyl-dichloro-diphenyl methane												x						
99688-47-8	monomethyl-dibromo-diphenyl methane bromobenzylbromotoluene, mixture of isomers												x	n					
8001-58-9	creosote; wash oil												x	y					
61789-28-4	creosote oil; wash oil												x	y					
84650-04-4	distilates (coal tal); naphthalene oils												x	y					
90640-84-9	creosote oil; acenaphthene fraction; wash oil												x	y					
65996-91-0	distilates (coal tal), upper; heavy anthracene oil												x	y					
65996-85-2	tar acids, coal, crude; crude phenols												x	y					
8021-39-4	creosote wood												x	y					
122384-78-5	low temperature tar oil, alkaline; extract residues (coal), low temperature coal tar alkaline												x	y					
79-00-5	1,1,2-trichloroethane												x	y					
75-35-4	1,1-dichloroethene												x	y					



## Appendix 3 Coverage of NLpsl substances by other frameworks

CAS-no	Substance name	Synonym	NL priority substance			Coverage														Notes						
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (NeR)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B	Policy status C		Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
16984-48-8	anorganic fluorides		19							x																
7440-38-2	arsenic and arsenic compounds		5																							
1303-28-2	diarsenic pentaoxide			74																						
1327-53-3	diarsenic trioxide			82																						
7778-39-4	arsenic acid			185																						
7778-44-1	calcium arsenate			186																						
7784-40-9	lead hydrogen arsenate			188																						
7440-41-7	beryllium and beryllium compounds			171																						
1304-56-9	beryllium oxide			75																						
7440-43-9	cadmium and cadmium compounds		8																							3
7790-79-6	cadmium fluoride			189																						1
1306-23-6	cadmium sulphide			76																						1
	chlorofluorocarbons (CFCs)		12																							
	chlorinated anilines		9																							
	chlorinated benzenes		10																							
12002-48-1	trichlorobenzenes																									3
108-70-3	1,3,5-trichlorobenzene			61																						3
120-82-1	1,2,4-trichlorobenzene			68																						3
87-61-6	1,2,3-trichlorobenzene																									3
	(other chlorinatedbenzenes)																									
106-46-7	1,4-dichlorobenzene		10																							

CAS-no	Substance name	Synonym	NL priority substance		Coverage														Notes							
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not covered internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B		Policy status C	Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
118-74-1	hexachlorobenzene			67		x									x											
608-93-5	pentachlorobenzene			159		x											x									
87-86-5	chlorinated phenols		11																							
7440-47-3	pentachlorophenol	PCP		201		x			y								x	x								3
14977-61-8	chromium and chromium compounds		13								x	x											x	x		
1333-82-0	chromyl dichloride			92							x	x														
7738-94-5	chromiumoxide			83							x	x										x	x	x	x	x
7738-94-5	chromic acid			181							x	x										x	x	x	x	
7778-50-9	potassium dichromate			187							x	x										x	x	x	x	x
18540-29-9	chromium (VI)-compounds (DDT and DDT derivatives)			99			x				x	x										x				
53-19-0	DDD, 2,4'-isomer			146							x	x					x	x						x	x	
72-54-8	DDD, 4,4'-isomer			168							x	x					x	x						x	x	
3424-82-6	DDE, 2,4'-isomer			130							x	x					x	x						x	x	
72-55-9	DDE, 4,4'-isomer			169							x	x					x	x						x	x	
789-02-6	DDT, 2,4'-isomer			190							x	x					x									
50-29-3	DDT, 4,4'-isomer			139			x										x									
	(dioxins and furans)																									
	dioxins		16				x																			
	polychlorinated dibenzo-p-dioxins	PCDD's		211			x																			
	polychlorinated dibenzo-p-furans	PCDFs		210			x																			
	(drins)																									
309-00-2	aldrin			125			x																			3
60-57-1	dieldrin						x	x																		3
72-20-8	endrin						x	x																		3
465-73-6	isodrin			135			x																			3
115-29-7	endosulfan						x	x																		
959-98-8	alpha-endosulfan						x	x																		
	phenols		18																							
25154-52-3	nonylphenols						x	x																		



CAS-no	Substance name	Synonym	NL priority substance			Coverage														Notes						
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B	Policy status C		Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
76-01-7	pentachloroethane			177			x				y										x					3
79-34-5	1,1,2,2-tetrachloroethane			193			x				y										x					3
127-18-4	tetrachloroethylene	PER	42								x															
56-23-5	carbon tetrachloride		43								x															
71-55-6	1,1,1-trichloroethane		44								x															
79-01-6	trichloroethylene		45								x															
67-66-3	trichloromethane	chloroform	46				x		y		y															3
593-60-2	bromoethylene	bromoethene	153								x															
75-01-4	chloroethylene	chloroethene	47				x				y															
	<i>(glycol ethers)</i>																									
110-80-5	2-ethoxyethanol			64							x															
111-15-9	2-ethoxyethyl acetate			65							x															
109-86-4	2-methoxyethanol			62							x															
110-49-6	2-methoxyethyl acetate			63							x															
1589-47-5	2-methoxypropanol			95							x															
	coarse dust		40																							
608-73-1	hexachlorocyclohexane	BHC; HCH	22	158			x				y															3
58-89-9	gamma-hexachlorocyclohexane	lindane; gamma-HCH; gamma-BHC					x				y															3
	<i>(cobalt compounds)</i>																									
10124-43-3	cobalt sulphate			54																						
7646-79-9	cobalt dichloride			179																						
7440-50-8	copper and copper compounds		24																							
7439-97-6	mercury and mercury compounds		25				x				y															3
	mercury and organomercury compounds						x																			
7439-92-1	lead and lead compounds		26				x				y															3
	lead and organolead compounds						x																			
1335-32-6	lead, bis(acetato-O)tetrahydroxytri-			85							x															2
301-04-2	lead di(acetate)			123							x															2
10190-55-3	lead molybdate			55							x															2

CAS-no	Substance name	Synonym	NL priority substance			Coverage													Notes							
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B		Policy status C	Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
37240-96-3	dilead dirhodium heptaoxide			133			x														x					2
7440-02-0	nickel and nickel compounds		31				x		y	y			x													3
1314-06-3	dinickel trioxide			78			x														x					
1313-99-1	nickel monoxide			77			x														x					
16812-54-7	nickel sulphide			96			x														x					
13463-39-3	tetracarbonylnickel			89			x														x					
	nitrate (nitrotoluenes)		32								x	x	x	x									x			
602-01-7	2,3-dinitrotoluene			155							x	x									x	x				
121-14-2	2,4-dinitrotoluene			69			x														x					
619-15-8	2,5-dinitrotoluene			161							x	x									x	x				
606-20-2	2,6-dinitrotoluene			157							x	x									x	x				
618-85-9	3,5-dinitrotoluene			160							x	x									x	x				
	oil and hydrocarbons		1								x	x									x	x				
	organotin compounds				x	x							x													
688-73-3	tri-n-butyltin hydride			173			x						x													
36643-28-4	tributyltin cation				x	x							x													
7486-35-3	tributylvinylstannane					x							x													1
	other organotin compounds																									
41083-11-8	azocyclotin			134			x															x				1
76-87-9	fentin hydroxide			180			x														x					1
900-95-8	fentin acetate	triphenyltin acetate		202			x						x													1
	loxiranes)																									
106-89-8	1-chloro-2,3-epoxypropane			56							x											x				
75-56-9	methyl-oxirane	propylene oxide	30								x															
75-21-8	oxirane	ethylene oxide	33	176							x											x				
	polychlorobiphenyls (PCBs) and chlorinated Terphenyls (PCTs)		36				x						x													

CAS-no	Substance name	Synonym	NL priority substance			Coverage														Notes						
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B	Policy status C		Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
1336-36-3	polychlorobiphenyls	PCBs	36	88; 212		x									x											
61788-33-8	chlorinated terphenyls	PCTs	36				x											x								
1763-23-1	perfluorooctanesulfonic acids and their salts	PFOS			x	x																				
	polycyclic aromatic hydrocarbons	PAHs	35			x				y					x											3
120-12-7	anthracene				x	x																				
56-55-3	benz[a]anthracene			151			x																			
50-32-8	benzo[a]pyrene, benzo[def]chrysene		35	140		x				y					x											3
205-99-2	benzo[e]acephenanthrylene			110		x																				
192-97-2	benzo[e]pyrene			106			x																			
191-24-2	benzo[ghi]perylene			103			x																			
205-82-3	benzo[j]fluoranthene			109			x																			
207-08-9	benzo(k)fluoranthene			112			x																			
218-01-9	chrysene			114			x																			
226-36-8	dibenz(a,h)acridine			117							x	x														
224-42-0	dibenz(a,j)acridine			116							x	x														
192-65-4	naphtho[1,2,3,4-def]chrysene			105							x	x														
53-70-3	dibenz[a,h]anthracene			148			x																			
189-64-0	dibenzo[b,def]chrysene			101							x	x														
189-55-9	benzo(r,s,t)pentaphene			100							x	x														
191-30-0	dibenzo[def,p]chrysene			104							x	x														
85-01-8	phenanthrene			197							x			x												
206-44-0	fluoranthene		35	111																						
194-59-2	7H-dibenzo[c,g]carbazole			108					x																	
193-39-5	indeno[1,2,3-ed]pyrene			107			x						x	x												
91-20-3	naphthalene				x																					
	polychloronaphthalenes				x																					
32241-08-0	heptachloronaphthalene			126			x																			
1335-87-1	hexachloronaphthalene			86			x																			
2234-13-1	octachloronaphthalene				x		x																			
1321-64-8	pentachloronaphthalene			80			x																			

CAS-no	Substance name	Synonym	NL priority substance			Coverage														Notes						
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B	Policy status C		Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
1335-88-2	tetrachloronaphthalene			87		x															x					
1321-65-9	trichloronaphthalene			81		x															x					
70776-03-3	nphthalene, chloro derivs.				x	x																				
7440-66-6	zinc and zinc compounds		48								x	x	x	x									x	x		
	<i>(other compounds)</i>																									
	<i>(medicins)</i>																									
50-63-5	chloroquine bis(phosphate)			141							x	x									x	x	x	x		
23593-75-1	clotrimazole			120		x															x					
22832-87-7	miconazole nitrate			118							x	x									x	x	x	x		
	<i>(hormone-like compounds)</i>																									
50-28-2	beta-estradiol			138							x	x									x	x	x	x		
56-53-1	diethylstilbestrol	DES		150							x	x									x	x	x	x		
512-04-9	diosgenin	spirost-5-en-3-ol, (3beta,25R)-		143		x															x					
53-16-7	estrone			145							x	x									x	x	x	x		
57-63-6	ethinylestradiol			152							x	x									x	x	x	x		
	<i>(plant protection products and biocides)</i>																									
15972-60-8	alachlor				x				x																	
1912-24-9	atrazine			102					x																	
151-56-4	aziridine			93								x														
57-74-9	chlordane				x	x																				
143-50-0	chlordecone			91		x																				
470-90-6	chlorfenvinphos			136					x																	
2921-88-2	chloorpyrifos	chloorpyrifosethyl			x				x																	
115-32-2	dicofol			66		x																				
330-54-1	diuron			128					x																	
2104-64-5	ethyl- <i>p</i> -nitrophenylphenylthiophosphonate	EPN		113		x																				

CAS-no	Substance name	Synonym	NL priority substance			Coverage														Notes						
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B	Policy status C		Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
122-14-5	fenitrothion			70							x	x						x	x							
51630-58-1	fenvalerate			144							x	x						x	x							
70124-77-5	flucythrinate		167				x											x								
76-44-8	heptachlor			178			x											x								
28680-45-7	heptachloronorbornene			121			x											x								
34123-59-6	isoproturon					x			x											x						
72-43-5	methoxychlor					x	x												x							
534-52-1	4,6-dinitro-o-cresol			147							x	x						x	x							
2385-85-5	mirex					x	x												x							
1836-75-5	nitrofen			98							x	x						x	x							
122-34-9	simazine					x													x							
2227-13-6	tetrasul			115			x												x							
8001-35-2	toxaphene			195			x												x							
101-20-2	triclocarban			53															x	x						
1582-09-8	trifluralin			94			x												x							
	<i>(other compounds)</i>																									
107-02-8	acrylaldehyde		2								x															
107-13-1	acrylonitrile	2-propenenitril	3								x															
7664-41-7	ammonia		4								x															
62-53-3	aniline			162							x															
1332-21-4	asbestos		6				x																			
71-43-2	benzene		7				x		y		y				x											3
106-99-0	buta-1,3-diene			58							x															
123-73-9	(E)-crotonaldehyde			72							x															
107-20-0	chloroacetaldehyde			59							x															
100-44-7	$\alpha$ -chlorotoluene	benzylchloride		51							x															
294-62-2	cyclododecane			122			x																			
4904-61-4	cyclododeca-1,5,9-triene			137			x																			
91-94-1	3,3'-dichlorobenzidine			205							x	x														
64-67-5	diethyl sulphate			164							x															

CAS-no	Substance name	Synonym	NL priority substance			Coverage														Notes						
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B	Policy status C		Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR
793-24-8	N-1,3-dimethylbutyl-N'-phenyl-p-phenylenediamine	6-PPD		192		x														x						
77-78-1	dimethyl sulphate			184						x										x						
107-22-2	glyoxal	glyoxal		60						x										x						
74-85-1	ethylene		17							x																
96-45-7	imidazolidine-2-thione	ETU		207							x		x							x	x	x	x	x		
100-63-0	phenylhydrazine			52							x		x							x	x	x	x	x		
50-00-0	formaldehyde	methanal	27							x										x						
75-12-7	formamide			174							x		x							x	x	x	x	x		
77-47-4	hexachlorocyclopentadiene	HCCP		182						x										x						
335-57-9	perfluoroheptane			129						x																
107-46-0	hexamethyldisiloxane	HMDS			x					x										x						
302-01-2	hydrazine			124						x										x						
123-31-9	hydroquinone	1,4-benzenediol; 1,4-dihydroxybenzene		71							x		x							x	x	x	x	x		
7758-01-2	potassium bromate			183							x		x							x	x	x	x	x		
630-08-0	carbon monoxide		23							x																
75-15-0	carbon disulphide			175						x																
625-45-6	methoxyacetic acid			163						x																
95-53-4	o-toluidine			206						x																
81-15-2	musk xylene				x	x																				
127-19-5	N,N-dimethylacetamide			73							x															
68-12-2	N,N-dimethylformamide			165							x															
91-59-8	2-naphthylamine			204								x														
51000-52-3	vinyl neodecanoate			142			x				y														3	
98-95-3	nitrobenzene			209							x															
79-46-9	2-nitropropane			194							x															
79-16-3	N-methylacetamide			191							x															

CAS-no	Substance name	Synonym	NL priority substance			Coverage													Notes								
			Old priority substance	Additional priority substance	new added (2006)	whole environment, NC level	whole environment, not NC level	water only covered, NC level	water only covered, not NC level	air only covered, NC level	air only covered, not NC level	Not covered internationally	Not internationally but nationally (N&R)	Not covered at all	Policy status A	Not covered, having policy status A	Policy status B	Not covered, having policy status B		Policy status C	Not covered, having policy status C	Policy status D	Not covered, having policy status D	Not covered, having policy status A, B or D	Same as left and REACH pre-registered	Same as left and CMR	
10028-15-6	ozone		34							x																	
1825-21-4	pentachloro-anisole			97		x												x									
133-49-3	pentachlorobenzenethiol			84														x	x								
10043-92-2	radon		37							x		x						x	x								
11104-93-1	nitrogenoxides	NOx	38							x				x													
100-42-5	styrene		41							x								x									
69029-86-3	slags, tellurium			166							x		x					x	x								
108-88-3	toluene	methylbenzene	28				x			y								x									3
823-40-5	2-methyl-m-phenylenediamine			196							x		x					x	x								
91-08-7	2-methyl-m-phenylene diisocyanate			203							x		x							x	x	x	x	x			
98-07-7	$\alpha,\alpha$ -trichlorotoluene			208							x									x							
355-43-1	1,1,1,2,2,3,3,4,4,5,5,6,6-tridecafluoro-6-iodohexane			131							x		x							x	x						
603-35-0	triphenylphosphine			156							x	x										x					
2314-97-8	trifluoroiodomethane			119							x									x							
55525-54-7	3,3'-(ureylenedimethylene)bis(3,5,5-trimethylcyclohexyl) diisocyanate			149			x													x							
1314-62-1	vanadium pentoxide			79							x		x									x	x	x	x	x	
7446-09-5	sulphur dioxide		49								x											x					
7783-06-4	hydrogen sulphide		50									x										x	x	x	x		

Notes:

- 1 Considered to be fully covered for the whole environment because member of a fully covered group.
- 2 Considered to be partially covered for the whole environment because member of a partially covered group.
- 3 "y" indicates coverage of a single compartment when there is already coverage of the whole environment

## Appendix 4 Substances of the NLpsl not covered by (inter)national frameworks

CAS number	Substance name	Synonym	NL priority substance		REACH pre-registered	policy status
			old priority substance	additional priority substance		
16984-48-8	anorganic fluorides		19		No	A
7778-39-4	arsenic acid			185	Yes	D
	chlorinated anilines		9			B
	chlorinated benzenes		10			B
	chlorinated phenols		11			B
7440-47-3	chromium and chromium compounds		13		Yes	B
1333-82-0	chromiumoxide			83	Yes	D
7738-94-5	chromic acid			181	Yes	D
7778-50-9	potassium dichromate			187	Yes	D
53-19-0	DDD, 2,4'-isomer			146	Yes	B
72-54-8	DDD, 4,4'-isomer			168	Yes	B
3424-82-6	DDE, 2,4'-isomer			130	Yes	B
72-55-9	DDE, 4,4'-isomer			169	Yes	B
	phenols		18			D
	phosphates		20			A
	coarse dust		40			D
10124-43-3	cobalt sulphate			54	Yes	D
7440-50-8	copper and copper compounds		24		Yes	A
	nitrate		32			A
85-01-8	phenanthrene			197	Yes	D
7440-66-6	zinc and zinc compounds		48		Yes	A
50-63-5	chloroquine bis(phosphate)			141	Yes	D
22832-87-7	miconazole nitrate			118	Yes	D
50-28-2	beta-estradiol			138	Yes	D
56-53-1	diethylstilbestrol	DES		150	Yes	D
53-16-7	estrone			145	Yes	D
57-63-6	ethinylestradiol			152	Yes	D
96-45-7	imidazolidine-2-thione	ETU		207	Yes	D
100-63-0	phenylhydrazine			52	Yes	D
75-12-7	formamide			174	Yes	D
123-31-9	hydroquinone			71	Yes	D
7758-01-2	potassium bromate			183	Yes	D
91-08-7	2-methyl-m-phenylene diisocyanate			203	Yes	D
1314-62-1	vanadium pentoxide			79	Yes	D
7783-06-4	hydrogen sulphide		50		Yes	D

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